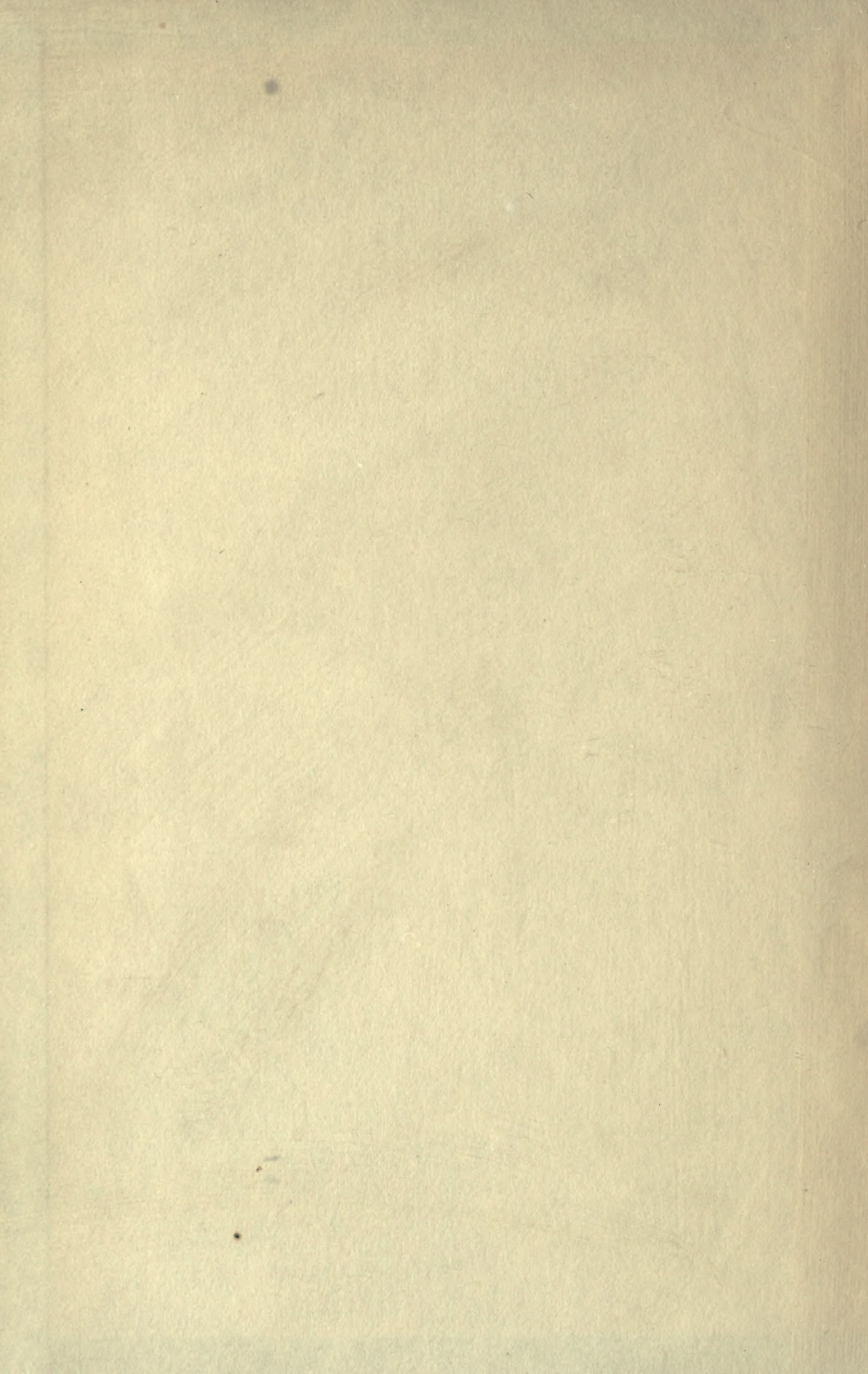



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THE ORGANIZATION OF INSTRUCTION MATERIALS

WITH SPECIAL RELATION TO THE
ELEMENTARY SCHOOL CURRICULUM

By J. W. HECKERT, Ph.D.



TEACHERS COLLEGE, COLUMBIA UNIVERSITY
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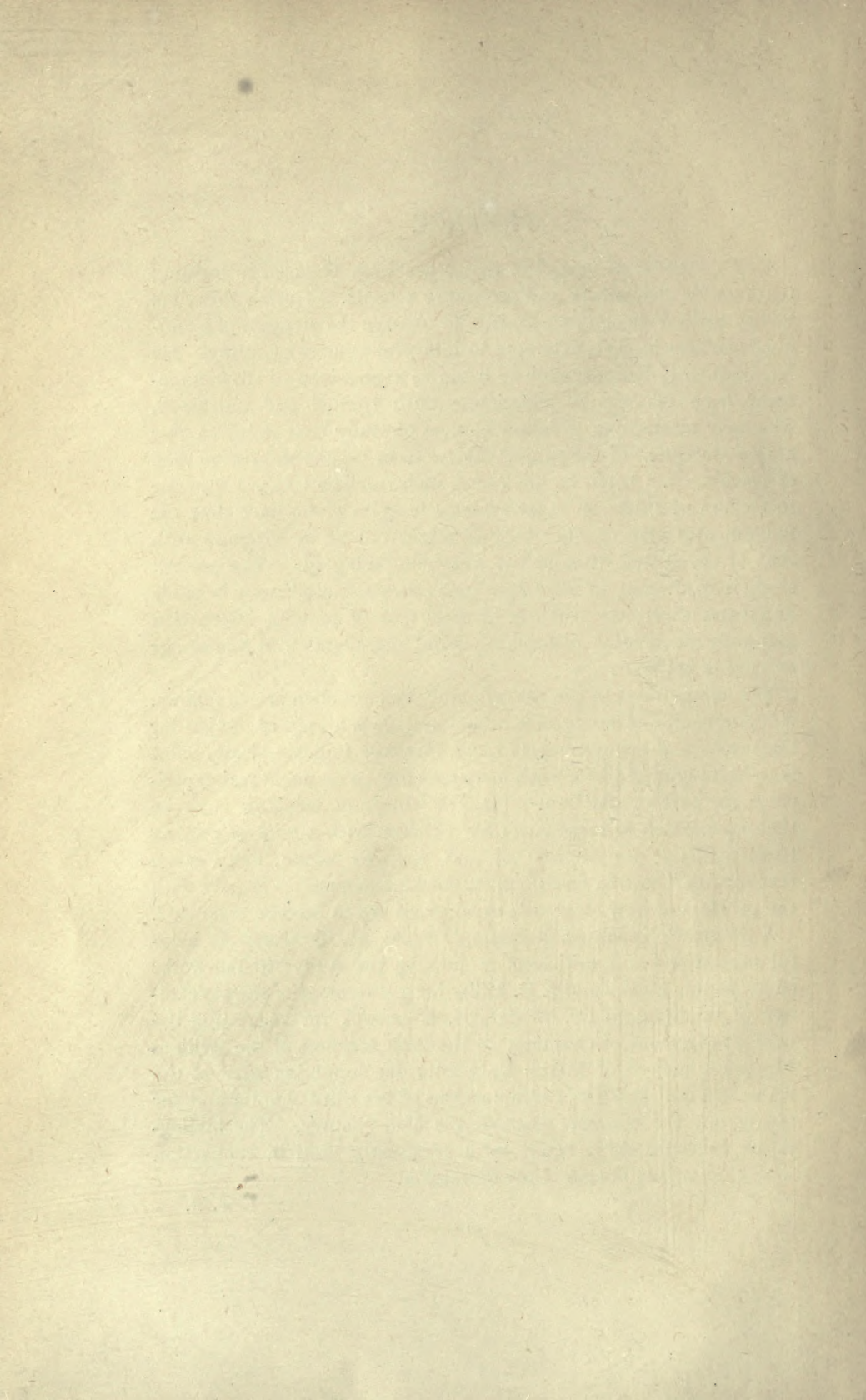
PREFACE

FOR a number of years the writer has been engaged in training teachers for elementary and secondary schools. During this time he has had excellent opportunities to observe the struggle of beginning teachers in their attempts to interpret courses of study. He has frequently had occasion to listen to expressions of discouragement from teachers of experience, both trained and untrained, who were attempting to follow courses of study that failed to give a clear statement of the subject matter to be taught and the method of teaching it. Often he has found such teachers to have recourse to courses of study of other systems in spite of the fact that the fundamental plan of such courses might not be in harmony with that of the system to which it was being adapted. The present study is an attempt to show how such courses of study may be made of greater service to teachers in their task of making instruction materials meaningful, of bringing about organization of knowledge on part of children.

The assumptions in the discussion of this problem are as follows. (1) The course of study of a school system is a plan of action for the teachers of the system; it must therefore indicate clearly what is to be taught and how such materials are to be made real experiences on part of children. (2) The object of teaching must be the organization of experiences by children with a view of making them available for further use and, for this reason, helps given teachers on "how to teach" must concern themselves largely with the problem of how children's experiences are to become organized.

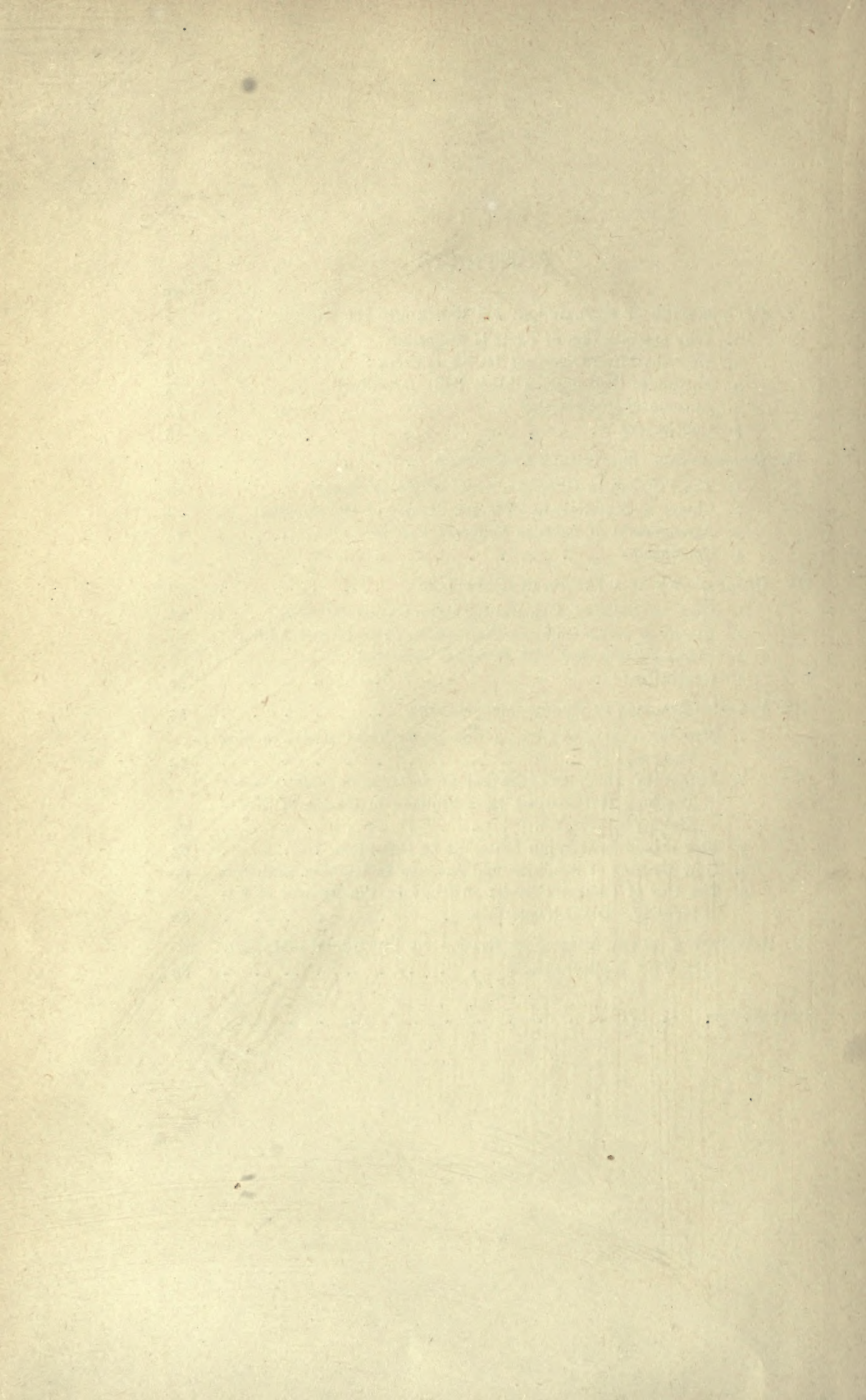
I am greatly indebted to Professor Frank M. McMurry for helpful suggestions and criticisms in making the study; to the works of Professors Dewey and I. E. Miller for a statement of the psychology of thinking; to Dr. William H. Kilpatrick for suggesting the final arrangement of chapters; to the critic teachers of the William McGuffey School of Miami University for supplying some of the illustrations of children's organizations of the third chapter and for trying out the concrete plans of the fifth chapter. The bibliography indicates those books most frequently used in connection with the various phases of the discussion.

J. W. H.



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ORGANIZATION OF INSTRUCTION MATERIALS

CHAPTER ONE

ORGANIZATION: ITS VALUE AND ITS FACTORS

I. WHY ORGANIZATION OF FACTS IS IMPORTANT

WHY do we attempt to organize knowledge? Venn holds that "the object of all classification is to keep our control over the parts by marshalling the objects in order; to know where to find a thing when it is wanted, and to economize our statements in the retention and communication of our knowledge."¹ To these ends he adds another which he designates as the "ulterior purpose" and which he states as "the aid and the stimulus to fresh study."² This latter end to him appears the most important of all. Bain agrees when he holds that "a science has a certain order or arrangement of topics, suitable to its ends in gathering, in verifying, and in communicating knowledge." Mill holds that "the end of classification, as an instrument for the investigation of nature, is . . . to make us think of those objects together, which have the greatest number of important common properties; and which, therefore, we have oftenest occasion, in the course of our inductions, for taking into joint consideration." Availability of facts, therefore, either for practical application, the solution of practical problems, teaching, or for the extension of knowledge, are here indicated as the chief ends of organization. In these statements there is another end implied which is emphasized by Hobhouse when he says "the ideal of knowledge, as we understand it, is to reduce the mass of facts with which it deals to an orderly and intelligible system." In this system every element, whether particular fact or general law, would be explained by its relation to the system as a whole."³ Creighton expresses the same idea when he maintains that in a system "no fact is allowed to stand by itself, but has to take its place as a member of a larger system of facts, and receive its value and *meaning* from this connection."⁴ And again, when

¹ Emp. Logic, p. 323.

² *Ibid.*, p. 342.

³ Theory of Knowledge, pp. 473-474.

⁴ Introductory Logic, p. 340.

he says, "The better we are able to put together in a systematic way the various facts which we have learned about geology, or astronomy, or the weather, the more *significant* each fact becomes." The geologist may be able to tell from the appearance of the cliffs what has taken place in a locality thousands of years ago. And, similarly, for the fisherman, the temperature, direction of the wind, its rising or its falling, etc., are all *signs* from which he is able to infer, more or less correctly, the kind of weather which may be expected.⁵ Organization is here considered the key to meaning and, therefore, the basis of rational behavior. Facts which are unrelated to other facts, which do not find a place in some system, some scheme, remain meaningless and do not affect rational conduct.

Authors of text-books on rhetoric insist upon the importance of good organization of thought as a means of securing clearness, and much space is devoted to showing just how clearness may be brought about in this manner. "Unity," "Coherence," and "Emphasis" are insisted upon with this idea in mind in connection with every form of discourse. Books and discussions noted for clearness, simplicity, and force are those which are well organized. Drummond's "The Greatest Thing in the World," Fiske's "The Critical Period in American History" (both mentioned by McMurry for that reason), Burke's Speech on Conciliation, and Spencer's "Essays on Education" are illustrations of good organization.

The importance of organization is well illustrated in industrial concerns, such as large manufacturing establishments. In the manufacture of an automobile, for example, hundreds, or even thousands, of workmen may be engaged. Some of these men make the various parts, each producing the same part over and over again during his working hours. Others assemble these parts, some the several units, such as the wheels, the rear axle, the engine, etc., and others these minor units into the complete car. Each of these men, therefore, plays a very definite part in the manufacture of the car and incidentally holds a very definite relation to all the other men engaged in the process. In establishments in which the organization is perfect there is no waste of time or effort on the part of the men; the product, therefore, can be efficiently and economically made.

The above illustration will serve not only to indicate the importance of organization in the industries, but it will also show the

⁵ *Op. cit.*, pp. 383-384.

significance of organization of knowledge for behavior or conduct. Before the men employed in an industrial establishment can work efficiently a method of procedure — an organization of the factory — must have been thought out, or planned, by somebody. The efficient organization of the factory, therefore, is merely the counterpart of efficient planning or organization of ideas.

It matters little, therefore, what fields of knowledge or of conduct are under consideration, whether we take the sciences dealing more especially with classifications, or those which attempt the development of principles or laws; or whether we turn from these fields of theoretical endeavor to the world of practical affairs, — organization is always conducive to clearness, to easy control over facts, making possible their application to the solution of practical problems, or to the extension of knowledge, and, ultimately, to rational and efficient conduct.

2. HOW THE MIND ORGANIZES ITS EXPERIENCES

How does the mind organize its experiences? Organization of knowledge is the product of thought or reflection. "It is by judging or thinking," says Creighton,⁶ "that we attempt to bring the various parts of our experiences into relation with one another." "Judgment combines the new facts with which it deals, with what is already known, in such a way as to give to each its proper place in relation to, and interdependence with, the others. Different facts are not only brought together, but they are arranged, related, systematized."⁷ It is evident therefore that whenever organization of facts is a desideratum thought or reflection is the essential condition. The problem of the organization of knowledge thus becomes the problem of the psychology of thinking, the problem of "how do we make facts meaningful" becomes the problem of "how do we think." Professor Dewey gives the following analysis of a complete act of thought. There is, first, a felt difficulty; second, there is an attempt to locate and define the difficulty; third, there follow suggestions of possible solutions; fourth, the development by reasoning of the bearings of the suggestion; fifth, further observation and experiment leading to its acceptance or rejection; that is, the conclusion of belief or disbelief. The first of these steps conditions the other four; unless there is a felt difficulty there will be no thinking. The second step has for its object

⁶ p. 342.

⁷ p. 340.

making the difficulty as clear as possible, to determine "just what is the trouble, or to make clear the specific character of the problem." The third step, the advancement of a hypothesis, controls the selection of facts essential to the solution of the problem. The fourth step has for its object establishing the implications of a given suggestion or hypothesis, selecting and arranging facts thought to have a bearing upon the case with a view of establishing a solution. The final step concerns itself with the verification of the tentative solution by the introduction of further facts, or the application of the tentative conclusion to other situations definitely planned for the purpose, leading finally to the complete establishment of the tentative conclusion or to its rejection as unsatisfactory. From this analysis it will be evident that organization of thought results in response to a problem, and that it consists in the selection and arrangement of facts with the guidance of a hypothesis proposing a tentative solution.

An outline of Wilson's essay, "The Truth of the Matter," as given in Professor Genung's "Working Principles of Rhetoric," will serve to illustrate this theory.

"Introduction: The ideal of writing history is to make a narrative that out of the profusion of actual facts so selects the few it can handle as to convey an impression of the whole truth and of every order of truth.

I. *The defect of the present-day "dispassionate" ideal.*

1. While it gives facts, it does not adequately impress the truth.
2. And this because it lacks the art necessary to this latter object.

II. *The historian's art and its end analyzed.*

1. From Macaulay's art, masterly but lacking, we learn that, while our narrative must contain in solution a judgment of things, that judgment must not be imposed from without as an advocate's plea but evolved from within as a discovered impression.
2. From Carlyle's and Gibbon's lack, respectively, we learn that, while the impression must be unitary, it must be neither too lurid and passionate nor too pale and remote.
3. From Green's lack we learn that, while scholarship and artistry may be in masterly combination, the result will fail unless the plan and variety of the telling answer to the plan and variety of the fact.

III. *The supreme requirements that this analysis suggests.*

1. That impressions be conveyed in the fresh and living spirit of impression and not in the severe spirit of scholarly accumulation.
2. That the color and proportion of such impressions be conceived as they must have come to the actors in the midst of the events.

Conclusion: This art of telling the truth requires imagination as well as scholarship, literary art as well as candor and honesty."

The following facts stand out in this outline: First, the incentive to reflection or thought which led to the resulting organization, or reorganization of facts, was a difficulty, an unexplained situation, containing some elements or factors whose relationship was not clear. Mr. Wilson asks, "How should history be written in order to convey the whole truth?" because there is a wide divergence of views on this point as shown by the actual practice of historians. Second, such facts are selected as have a direct bearing upon the difficulty or problem, and will therefore make possible its solution. Finally, the facts found to have a bearing upon the problem are arranged in such a manner as to make the solution proposed clear, forceful and sound.

3. THE FACTORS IN ORGANIZATION MORE FULLY DESCRIBED

(a) *The Problem.* What is the nature of the problem which induces organization? The presence of a problem is not an indication, however, that it will function effectively in the organization of experiences. Problems which seem of the greatest significance to one individual, or class, are ignored by others. The problem of the theologian quite generally fails to be appreciated by the scientist; that of the scientist by the merchant; while those of the merchant remain a matter of indifference to other classes. Children often show a marked indifference toward the problem of the textbook, and, at times, toward those of the adults in their environments. The problem which is to induce mental activity leading to organization of experiences must appear vital to the individual; unless he feels its importance and appreciates in some degree that something is to be gained through its solution, something worth while is to be known, no effort will be put forth.

How will such a problem arise? The fact that an individual feels the significance of a vital problem, feels its worth to himself, is an indication that it is closely related to his experience. His experience is inadequate for instant recognition of relationships, or immediate solution of the problem, but is nevertheless the essential factor giving rise to it. Mr. Wilson's problem, "How should history be written so as to convey the whole truth?" is the outgrowth of his experience as a student, teacher, and writer of history. Mr. Darwin, in his "Origin of the Species," before plunging into the discussion of the subject, gives us an account of the state of knowledge on this topic up to the time of his writing. These few pages

show that because of his comprehensive knowledge of the field has it become possible for him to see the *significance* of the problem which he then takes up for solution. Problems to be vital to an individual must therefore be closely related to his experience, must, in fact, be an outgrowth of this experience.⁸

But while experience, by making apparent the contradictory nature of facts and judgments, makes it possible for problems to arise, it must not be assumed that mere contradictoriness of judgments in itself makes a problem vital. Mr. Wilson takes up the solution of his problem not merely because he finds that historians differ in their method of treating historical data but because he feels that it is a point of great importance in the writing of history to represent each period truthfully, and that the method of the historian has a very close relation to this end. A problem will be appreciated as vital only when it is recognized as having direct relation to the attainment of some end which, if realized, will mean the satisfaction of a need. "Experience," it has been pointed out, "may lead one to see a value in work that to the inexperienced would seem mere useless drudgery. But the experience merely makes clear the connection between the work and the need. It cannot create the need. The energy in a motive comes from within. . . . Experience merely enables this energy to acquire clearness and direction, and thus to become a conscious motive."⁹ While experience does not create needs it does so modify the fundamental native needs that they express themselves in very different ways in different individuals. As Professor Thorndike says, "Each individual acquires interests in a special circle of friends, special divisions of knowledge, a special profession or trade, a special locality, and so with many objects of modern life." Experience may therefore be said to play the double rôle of making the individual cognizant of the value of work in the satisfaction of a need and of modifying somewhat fundamental native needs. Needs thus modified have been called acquired needs.¹⁰ Problems to be vital, therefore, must have a very intimate relation to the individual's needs as well as to his experience.

(b) *How will the Facts for the Solution of the Problem be Chosen?* What is the nature of the facts which will be chosen for the purpose of arriving at a satisfactory solution of the problem? It has

⁸ Dewey, *Studies in Logical Theory*, pp. 37-40.

⁹ Monroe, *Encyclopedia of Education*, Art. "Apperception."

¹⁰ Bagley, *Educative Process*, p. 83.

been shown that the condition which impels an individual to organize his experience is a problem which has a vital significance to him. The problem, as was pointed out, always implies a difficulty, a "gap" in the individual's experience, which must be bridged over through reflection, or thought. Through thought such mediating facts are selected as will establish a close connection between these formerly unrelated elements in the situation and lead to a conclusion based upon, and closely dependent upon, the facts so related. Now, if, as was just intimated, the facts selected are to be used for the purpose of establishing a chain of reasoning in a problematic situation, the implication would be that they must be definitely related to the problem to be solved and that the facts not so related must be rigorously excluded.

The problem in each case will determine just what facts will be essential for the purpose of solving it. Problems differing in any degree will require a somewhat different content for solution. The writer on zoology who aims to give the reader a systematic knowledge of the structure of the various organisms composing the animal kingdom selects a body of facts somewhat different from those of the writer who is especially interested in informing his readers concerning the methods to be employed for the effective control of certain forms of animal life. Certain facts, such as the relationship of a given order or class to other orders and classes, are of great significance in the one case but mean very little in the other. Thus the gill slits, the notochord, the dorsal nerve chord, and the eye developing from the brain, found in the larval Ascidian, are of great significance to the zoologist for establishing the true relationship of this class of organisms in the animal kingdom; but all the facts which might be stated about this class of animals would possess little if any value to the man of business. The fact that the early stages in the development of the fish, reptiles, chicken, and rabbit are quite similar may be of significance to the biologist for his purposes, but has no relation to the problems of the author of a cookbook or the manager of a meatshop. The several phases of psychology illustrate this point. The specific problem of physiological psychology is to account for the physical basis of mental life; its data are selected with this end in mind. Educational psychology attempts to show the relation of certain phases of general psychology to problems of education; its problem is "What can psychology offer for the solution of specific educational problems?" Child psychology deals with another group of problems and so

does the psychology of adolescence, each selecting the facts essential for that purpose. And so with other phases of psychology. Similar illustrations might be given in almost any other field. Thus we have political history, economic history, educational history of the United States; mathematical geography, physical geography, political geography, commercial and economic geography, etc., each having its specific problem and selecting the facts essential for its solution and ignoring others not so related. Only those facts, therefore, which have a definite relation to the problem and are needed for its solution will have any value in that connection.

Not only must the data used in the solution of a problem be relevant, however; they must be of a quality to make possible the ready recognition of those relationships which it is the purpose of thought to establish. The normal thing to do when confronted with a new situation is to interpret it in the light of previous, similar situations. "Whenever a new way of acting is to be organized," says Charters, "(the solving of the problem) experience falls back upon old ways with which it is familiar and therefore knows how to handle. . . . From all this past experience, that which can be adapted in reorganization for the new purpose is used."¹¹ In accordance with this law the individual in his attempt to work out the solution of a problem first appeals to his own experience in search of facts, principles, or laws, which might possibly enable him to solve the difficulty. These facts or principles he attempts to evaluate from the point of view of their relationship to the new problem. Knowing them in other connections he appreciates more readily those phases which make them significant in the new situation.

Often, however, the experience of the individual is not sufficient for the demands made upon it; the facts needed must be obtained in some way from outside sources. What facts will an individual choose under such conditions? There may be multitudes of facts which will suggest the answer, upon which the conclusion may be based, and any of these might therefore be selected as a basis for it. But a limited number only will be chosen, the choice being again effected in accordance with the Law of Apperception; those, namely, which have a meaning for the present purpose, whose relationship to the problem is most readily detected. Experience functions in this respect as it does in the location and definition of the problem; here it determines what facts shall be selected, limiting the choice

¹¹ Charters, *Methods of Teaching*, p. 155.

to those which are related to the individual's experience and to the problem, and which for that reason have the greatest significance to him; all others will be ignored.¹²

Relevancy of facts to the problem and a quality to make this relevancy most apparent and thinking most effective are the characteristics of facts usable for problem solution and the resulting organization of materials. There remains for discussion the number of facts essential for the satisfactory solution of a problem. In the solution of any problem the task, as previously indicated, is that of finding suitable mediating facts and of arranging them in an order appropriate for establishing the solution. How will the number of facts to be used in any unit of organization be determined? Both the comprehensiveness of the problem and the stage of development of the individual engaged in its solution are determining factors. Every unit of organization may be considered a system and as such must have the necessary number of elements to make it complete. The system constructed by Darwin in his "Origin of the Species" is very comprehensive and requires a wealth of data to establish it because of the magnitude of the problem. The very comprehensiveness of the problem suggests numerous minor problems each one of which must be considered in detail and disposed of in the same careful manner as the main problem in order to construct the system, a sound argument in support of the contention. Since Darwin's object is not merely to satisfy himself with reference to the problem he suggests, but to compel acceptance of his conclusion and belief in the soundness of his reasoning, he must use extra care to leave not even a small "gap" in the chain of reasoning, and, for this reason, supply sufficient data to bring this about. Whether the problem be large or small the materials introduced must always be sufficient in quantity to constitute a complete solution.¹³ The relation of the number of data needed for the solution of a problem to the development of the individual engaged upon it will be discussed in the second chapter. Facts then to be valuable in the solution of a problem must be relevant and must be of a quality to make ready recognition of this relevancy possible. The number to be used in the solution of a problem will depend upon the comprehensiveness of the latter and the maturity of the individual.

¹² Dewey, *How We Think*, p. 199.

¹³ But facts must not be so numerous as to make it impossible for the individual to manage them.

(c) *The Arrangement of Facts to Indicate the Solution of a Problem.*

The facts essential to the solution of any problem having been chosen, they must be arranged in such an order as to indicate the solution. How does the mind proceed in the arrangement of facts to indicate the conclusion sought, the relationship to be established? For this purpose it will be well to recall certain phases of the psychology of thinking. Once the problem which gives rise to organization has been clearly defined, enough elements in the situation may be known to make possible the statement of one or more hypotheses. Each hypothesis must then be tested out by (1) the selection of certain facts which will be relevant to the plan suggested by it, and (2) the arrangement of these facts in such a way as to indicate clearly the relation to be established and tentatively proposed in the hypothesis. An illustration will make this clear.

In attempting to account for New York's greatness as a trade center one might suggest as the possible causes the cosmopolitan character of its population, the intelligence and farsightedness of its commercial leaders of an earlier day, its favorable location, etc. Noting first the character of its population we find that the composition of the population of other large cities on the Atlantic coast is quite similar to that of New York. The same advantages, or disadvantages, attaching to this factor would be shared by all. This suggestion will therefore be discarded as unsatisfactory. Considering next the character of its commercial leaders it may be found that while New York has always had some great financiers, the same is true of the other cities on the Atlantic coast. And while undoubtedly there were farsighted business men who suggested the building of the canal and railroads, wharves, etc., such suggestions were valuable only because the presence of certain physical features, such as the Hudson and Mohawk rivers, the East River, New York Bay, etc., made them possible. The second suggestion, too, must therefore be dropped as inadequate. To test the adequacy of the third we may ask ourselves what advantages New York's location offers over those of the other large Atlantic cities. Here we should find that the city has a splendid harbor, direct water routes to Europe and South America, and that it has — and always has had — a more favorable connection with the hinterland than the other cities. To determine the significance of these factors for the problem in hand we ask what advantages arise from them. We should thus establish the facts that favorable connection with the interior of the country has meant in the past more favorable

connection with the country's raw products and readier access to its markets; that water connections equally good as those of other cities means access to the raw materials and markets of other countries; that a superior harbor means that ships will come to New York rather than go elsewhere, especially since in case of New York there is the added advantage of better connections with the interior of the continent. As a result of such testing of hypotheses, or reasoning, a number of minor connections will have been established, or recalled, for each of these above statements is a statement of a relation valuable in laying the foundation for the final relationship to be established, that between New York's location and its importance as a trade center. Relations to be established, therefore, are foreshadowed by the hypothesis, but come to be definitely established only after the selection of relevant facts and the development, through reasoning, of such connections between these facts as are valuable in determining the conclusion, the final connection sought.

The route which the mind takes in organizing its experiences, it will be seen from this account, is a circuitous one. Numerous suggestions appear, all of them seemingly satisfactory. But a number of them may lead into blind alleys and must be discarded before a satisfactory one will be found.

The organization resulting in any instance will, of course, depend upon the nature of the problem inducing it. Thus the business man who is considering how to vote on the tariff question will come to see the relation of the tariff to his business. Consciously, or unconsciously, his problem becomes, "How will the tariff affect my business?" and, as a result, the data chosen in deciding that matter will have a close relation to this problem, and their arrangement will be such as to show the relation of the tariff to his business. Quite different may be the organization of facts by the economist considering the relation of the tariff to the life of the nation as a whole. Not only is there likely to be a much larger number of data included in this case, data, too, of a far wider range, but they are likely to be so arranged as to lead to a somewhat different organization and conclusion. Thus while the business man may have decided that for his own interest he must vote for high protective tariff the economist may have arrived at the conclusion that while a high protective tariff is of benefit to some interests, the people of the country in general do not profit from it and ultimately they must pay the increased prices due to it. The nature of the

organization¹⁴ resulting, therefore, will be determined by the problem giving rise to it.

While the interest of both the business man and the economist may lie chiefly in the conclusion resulting in each case, it does not lie wholly there. As rational beings we wish to justify our conduct, or the ideas on which our conduct is based, and for that reason we try to make sure that we shall not only have in our possession the final conclusions but the grounds upon which they are based. These grounds, however, are merely the facts which were selected because of their relevancy to the problem and so arranged as to make the conclusion arrived at appear sound or rational. Thus the business man will have facts similar to the following as grounds for his conclusions and recall them as occasion demands. "The X party has a protective tariff plank in its platform. A protective tariff policy will lead this party, if placed in power, to put a tariff upon tools and machinery. Since I am interested in the manufacture of these things I shall profit from such a tariff." The economist might resort to the use of the following facts, or assumptions, as the grounds of his conclusion: "A protective tariff induces the establishment of a particular industry but does not add to the total industry of the country. It has a tendency to establish less productive industries in place of more productive ones; only when the duty is removed as soon as the industry becomes self-sustaining is economic waste avoided. A protective tariff may fail to establish self-sustaining industries and thus cause a permanent economic waste. The consumer must finally pay the tariff, not the importer. One protective duty may neutralize the advantages that domestic producers gain from others. The protective tariff does not increase the wealth of a country, does not increase permanently the net amount of money received from foreign countries, and cannot increase the general rate of wages in a country."¹⁵

Whether such an arrangement of facts or data in any case will be called inductive or deductive will depend upon the nature of the facts available for the solution of the problem. In the inductive arrangement specific instances must be selected in sufficient number to justify the generalization based upon them. When thinking of the basis of the generalization, therefore, we may recall the process by which we developed it rather completely, or merely in part. In the former instance we should probably think of the problem, the hypothesis suggested and accepted in its solution, the

¹⁴ Conclusion and supporting data.

¹⁵ Bullock, *Study of Economics*.

specific instances selected and arranged in support of the hypothesis, and the conclusion of a general nature. More commonly, however, we think merely of the specific instances upon which the conclusion is based. In the deductive arrangement, however, the generalization to be used in the solution of the problem has been previously established and may be used as a fact in its explanation. When attempting to recall the grounds of a conclusion derived by the deductive method, therefore, we think of the principle covering the case. A recall of the complete process of arriving at the conclusion in this case would include the problem, the explaining principle, the application of the principle to the case in hand, and the conclusion.

4. IS ALL ORGANIZATION THE PRODUCT OF THOUGHT?

Up to the present we have maintained that organization of knowledge is the product of thought. The question now to be raised very briefly is: Is organization of experience invariably the product of thought, or does it sometimes result without its intervention?

It has been pointed out that all thinking, whether day-dreaming or problem-solving involves, (1) a succession of ideational elements and (2) a purpose either definitely recognized or vaguely felt. Rowe¹⁶ calls organization resulting from activity during which the individual is not conscious of any purpose "automatic." He points out that there are two ways in which experience comes to be organized automatically. These are "(1) a wide range . . . of instinctive ways with which man is natively equipped, and (2) a large class of modified, combined, or selected ways which gradually develop according as satisfaction has been gained through their chance employment. All imitative tendencies, play tendencies, constructive, experimenting, and expressive tendencies, not to mention the assignment of meaning to various sense stimuli, and thousands of definite impulses to function with involved muscle combinations, such as the tendencies to make the eyes focus together, or hold the body erect in a sitting posture, all of these are automatic tendencies of a natural or instinctive order." All have a part in the automatic organization of experience. Under the second class, the "acquired automatic ways of organizing experience," he suggests as the most important classes "interpretations of and adaptations to complex sense experience, the use of the imagina-

¹⁶ Habit Formation and the Science of Teaching.

tion in suggesting new truths or new ways of doing things, the acceptance of truth or error on authority, the use of reason in criticizing and reenforcing suggestions of the imagination, and various subtle feeling and will attitudes of mind favorable in the main to bringing experiences into such combinations as to make them of increased service." The child's attempts to use his imagination in a playful manner, his humorous questions, who made God, what keeps the moon from falling, where the rain comes from, his naive attempts at explanations, are given as more concrete illustrations of this mode of organization of experience. Such organization of experience then is the result of native or acquired automatic tendencies and not the product of thought.

As a result of this tendency to organize automatically, the individual acquires a considerable number of specific ways of responding to certain stimuli, of reacting to certain situations, and a mass of information. Each of these responses, however, is an organization — a connection of stimulus and response — which has been established without regard to any other. Through experiment the child has found out that drinking the milk from his dish of breakfast food is a more effective mode than eating it with the spoon; that eating certain kinds of pie with his spoon is a more successful way than using the fork for the purpose. In each case, however, his mother informs him that his method of eating is not the method of polite society. He accepts the statement of the minister that God took his little playmate to heaven because he loved him so greatly; and he believes his mother when she says that flies must be kept out of the house in order to avoid typhoid fever from which his playmate died. From the viewpoint of the educated man such organization is chaotic. We have here not one or more systems of facts, or experience, into which the various responses, or ideas giving rise to them, fit, but instead a mass of uncorrelated experience often contradictory in the extreme.

This body of experience thus acquired, uncorrelated and contradictory in nature, serves to point out the significance of conscious organization. Such experience is a fertile field for problems to be solved only through reflection. Through conscious organization experiences become correlated, rationalized, organized into systems. Incidentally some modes of behavior will become modified, some opinions will be dropped, some facts harmonized.

In the present discussion conscious organization only will be considered.

5. CONCLUSIONS

Conscious organization has for its object the rationalizing of experience, rendering it more available for the investigation of specific problems, for the extension of knowledge, for communication to others, and for the control of conduct in general. It is conditioned by the presence of a purpose or problem of vital import to the individual organizing. A vital problem is one which has a close relation to an individual's experience and to his needs, either native or acquired. The purpose, or problem, through suggestions made for its solution, controls the selection and arrangement of materials essential to the establishment of the conclusion sought. Facts to be of greatest value in the solution of a problem and, therefore, in the organization of knowledge, must be of a quality to make ready recognition of their relevancy to the problem possible. The number of facts to be used in any case will depend upon the comprehensiveness of the problem and the maturity of the individual. The general relation to be established will be suggested by the hypothesis and will be fully established through subsequent reasoning when facts relevant to the problem are arranged in such a manner as to determine the conclusion embodying the final relation sought. The kind of organization resulting in any case will depend upon the nature of the problem giving rise to it. Both the conclusion, or ultimate relation sought, and the grounds, or supporting data, will be retained more or less fully by the individual organizing. Whether the arrangement of facts in any case will be of the inductive or the deductive type will depend upon the nature of the facts available for the solution of the problem.

Organization of experience is not always the product of thought; it occurs automatically as well. Conscious organization, however, must ultimately step in to the end that correlation, or systematization, of experience may take place.

CHAPTER TWO

ORGANIZATION GENETICALLY CONSIDERED

IN the preceding chapter an attempt was made to show how an individual consciously organizes the facts of his experience. All conscious organization, it was there stated, is performed under stress of a purpose or problem. The experiences essential to the solution of such a problem are selected and arranged in the light of a hypothesis to indicate the solution of the problem, the relationship in question. While, however, the process of organization always takes place under the conditions suggested, and its product is always some sort of relationship, there are some differences during the several stages of development of an individual which must be taken into consideration for the purpose of the present discussion. In the present chapter, therefore, we shall show how both the process of organization and its product differ in some respects during the several stages of development.

I. THE PROBLEM IN THE DIFFERENT STAGES OF DEVELOPMENT

It was pointed out above that problems, in order to cause organization of experience, must be vital and that vital problems have a very intimate relation to both the individual's experience and his needs. Now if vital problems are an outgrowth of an individual's experience it is evident that they must differ greatly in the several stages of development of an individual. In his early school career the child's experience, both because of its limitations in range and its lack of coherence, does not enable him to appreciate the significance of problems which to the adult are vital; the experience of the ordinary man for the same reason does not suggest as many, nor the kind of, problems within a given field as that of the scientist who specializes in that field. On the other hand, the needs of these different classes likewise differ. The life of the child is largely one of action; the desire to do something, to play, to construct, to tear apart, but always to act, is dominant. Problems which arise in his experience are therefore very largely con-

cerned with his activities. How can I catch a fish, a butterfly? How can I fix my wheelbarrow? How can I make a box, a doll-house, a dress, a wagon, a popgun, a book? How can I make my batteries work, build a bridge, a waterfall, fire a bowl, etc., are problems illustrating this point. All of them arose in connection with the child's activities and around them essential experiences were organized. These early problems of the child are practical difficulties, "something to be done or made, or some tangible result to be reached." We find such problems in every period of life. The needs most keenly appreciated by the laboring man, the business man, are those which arise in connection with their business activities, their duties in social and civic affairs. Problems to appear vital would therefore be an outgrowth of business, civic, social, etc., experience, and be based upon the respective needs. As Professor Dewey has pointed out, "Intellectual organization originates, and for a time grows as an accompaniment of the organization of facts required to realize an end (not as a result of a direct appeal to thinking power). . . . All people at the outset, and the majority of people probably all their lives, attain ordering of thought through ordering of action."¹ In the early life of the child, therefore, — and playing a very important part of every stage of the elementary school, — the problem related to some of the child's activities, the problem of action, must play a leading part in the organization of his experiences.

With the first three or four years of the elementary school period the experience of the child grows both in range and in organization. His stock of imagery develops proportionately and the image assumes the function of a symbol. "Imagination ceases to be so blindly impulsive, and images serve to guide and direct activity through a series of steps." The child becomes conscious of the distinction between means and end and consequently a rapid development in thinking power takes place during the elementary school period. The interests of the child remain practical very largely. Native tendencies, such as the constructive instinct, the instinct of inquiry, of artistic expression, of communication, and the acquired interests in occupation of the adults in their environment, vocational, civic, moral, religious, etc., are controlling factors during this period. "While, of course, we expect to lead the child to an appreciation of theoretic values, the dominant practical interest makes necessary a point of contact in some concrete situa-

¹ *How We Think*, p. 41.

tion.”² The problem which assumes significance is the problem of the “particular concrete whole,” the explanation of a specific case, the problem which can be solved by taking into consideration the facts bearing upon a particular concrete whole, all of which may be observed directly, or may be readily represented by the imagination. Why Cincinnati can manufacture furniture in such large quantities; why Minneapolis manufactures flour so extensively; how our schoolroom may be ventilated; how Burgoyne failed in his attempt to separate the New England states from the rest of the country: these are illustrations of this type of problem.

With the beginning of the adolescent period children evince interest in another type of problem, the problem dealing with universal relations, the solution of which involves either the development, or the application of comprehensive generalizations.³ The broader outlook upon life during this period, a better organization of his experiences, a more adequate control of the technique of thinking make it possible for him to see the importance of these more comprehensive problems. But there are also new needs arising at this time which play an important part in making this type of problem appear vital. “Through the ripening and sudden emergence of the sex instinct, the youth is made conscious that the period of childhood has come to an end. The emergence of the sex factor in consciousness is not merely physical in its significance, but even more so social. It emphasizes two things: (1) that the individual has come to a period of independence and (2) that he is a part of a larger social whole than his own family. As a result of the first emphasis, he is likely to rely upon his own judgment; as a result of the second his interest is suddenly aroused in the larger problems of human life. . . . In his new sense of independence and personal responsibility, he is more likely to reconstruct his experiences along every line consciously and reflectively. He must take account of stock and know where he stands. This, together with his broader outlook upon life, makes more emphatic his consciousness of the need of fundamental principles and laws. Hence there develops a new and keener interest in, and appreciation of, great generalizations.”⁴ While the vital problem during this period will be such as to lead to the more fundamental principles and laws of science and the organization of facts around them, it is not the problem of pure science which is here referred to. The

² Miller, *Psychology of Thinking*, p. 183.

³ *Ibid.*, pp. 185-188.

⁴ *Ibid.*, pp. 185-187.

latter presupposes an experience which in quantity and quality is far beyond that of the period here concerned, and would therefore be quite meaningless at this time. The significance in this as in the preceding periods is conditioned by its apparent relationship to the experience of the individual.

Ultimately, of course, we reach a stage of development in some individuals when the problem most vital to them is the one dealing specifically with the interdependence of facts themselves or aiming at the development of systems without a consideration of their relation to some immediately practical interest. This is the problem of the scientist and the philosopher, and is conditioned by experience beyond the majority of people. It has for its outcome the organization of facts into science and philosophy.⁵

The several types of problems are not intended as a logical classification of the conditions under which individuals organize. The problem of action is so named from the manner in which it arises. It may aim at the solution of a specific difficulty, or at the development of a generalization. It may be solved by the trial and error method, by the recall of a certain concrete experience applicable to the case, or by the use of a principle or system of knowledge. Just what method of solving will be used will depend upon the amount and degree of organization of experience available for the purpose, and the individual's recognition of its applicability to the situation in hand. It is suggested as a type because of its frequency of appearance in child life.

The problem of the concrete whole is named after the method used in its solution. It may arise in connection with some physical activity, and may therefore be a problem of action; or it may be of purely intellectual origin. What distinguishes this problem from others is the fact that it will be solved by an appeal to the elements within a given concrete situation, no explaining principles being available for the purpose.

Problems aiming at the development of generalizations and systems are named after the end in view in their solution. The former may arise in connection with physical difficulties; the latter probably do not. In the solution of these problems a greater amount and a higher degree of organization of experience than in the preceding type are essential conditions.

While the several types of problems do not represent a logical classification they will enable us to trace the progressive organ-

⁵ Dewey, *Psychology*, p. 232.

ization of facts in the several stages of the individual's development.

In the discussion of these several types of problems it has been found that experience plays a very important part in indicating the nature of the problem and showing its relation to some need. This appears evident from the earliest stages. Now in order that experience may be instrumental in giving rise to problems at all some degree of organization must have taken place. It is evident that in the early stages of the child's development such organization could not have been due to conscious effort, but was the result of automatic tendencies instead. That experience so organized would probably furnish an excellent source of problems was pointed out in the preceding chapter. Having been acquired without a purpose, and from various sources, it will constitute a fertile field for conflicts and a fine opportunity for thought to bring order out of chaos. Later in the individual's development consciously organized experience will, of course, play its part in supplying problems.

2. CHOICE OF MATERIALS IN DIFFERENT PERIODS OF DEVELOPMENT

(a) *Kinds of Materials.* Facts or materials to be valuable in the solution of problems and, therefore, in the organization of knowledge, must be of a quality to make ready recognition of relationships possible, it was pointed out in the first chapter. They must be concrete, in other words. Now a fact which appears concrete in one stage of development may seem quite abstract in the preceding period; whether it will be regarded as concrete or abstract will depend wholly upon the individual's experience in a given direction. In case of the novice in a given field, or the young child in every field, we are dealing with the so-called practical judgment⁶ stage of organization of experience. The type of material which has meaning here is that relating to some specific situation which the individual himself has observed and sufficiently analyzed to recognize its various elements. Thus a boy confronted with the task of putting a barrel, too heavy for him to lift, upon a wagon, will most likely recall how he has seen somebody else load a heavy barrel by the use of planks or skids. This experience is concrete and has meaning in the present instance because when observing this process he recognized clearly the relation of the use of planks

⁶ Hobhouse, *Mind in Evolution*.

to the loading of the heavy object; it becomes valuable, therefore, for use in similar situations. The adult, inexperienced in the use of gasoline engines, who is having trouble with the motor of his car, is most likely to recall how he succeeded in making it go upon a previous occasion, if at that time he recognized clearly, or learned subsequently, the significance of his act with reference to the end desired. In this stage of development, therefore, the individual attempts to recall the essential elements of a previous similar experience whose value with regard to the purpose in hand he appreciates.

With the increase of experience in a given direction and its organization into generalizations, or concepts, the latter may be used as readily in the organization of new experiences as specific facts were originally. The term "trade center," the rule for the extraction of the square root, Ohm's Law, etc., appear concrete to an individual in this stage because the substratum of specific instances has made them so. These facts themselves express relations, or organization of experience, and are therefore very significant in the further organization of knowledge.

Ultimately whole systems of knowledge may be appealed to for the purpose of solving problems, or organizing new facts. Such systems again will rest upon the relations developed in the earlier periods and could not exist without them. They are concrete, therefore, only to those who have the background of experience to appreciate the relationships suggested by them. Here the so-called facts are comprehensive systems of relations most valuable in subsequent organization of knowledge.

Whether or not an individual can use specific or general facts, or systems of knowledge, in the further organization of knowledge will depend upon the amount of experience and the degree of its organization which he has attained in a given direction. Since a person's experience in certain lines may be of the most exhaustive sort while in certain other fields it may be very meagre, it is evident that the amount and degree of organization *in a given field* will determine the nature of the facts which can be used in the further organization of the field.

The implication of this analysis for the school is clear. Facts of a specific nature must be used in the lower grades and in the upper grades when experience in a given field is limited. To be usable, however, such facts must have a meaning, must have been observed with reference to some purpose which made it possible for the in-

dividual to perceive the relation of the fact to certain other facts, or of one factor to the other factors in a given situation. This principle has been recognized by the introduction of "home geography," biographical history, nature study, and objective arithmetic into the elementary course of study. To comply fully with the principle, however, there must be observation under stress of some vital purpose, study with reference to a significant end. Mere observation of objects is quite useless for the purpose of leading to a perception of relationships.

In the use of general facts in the organization of knowledge care must be taken that such facts are actually within the experience of the child. Teachers in general are quite clear upon the significance of the rule and definition in arithmetic and grammar but commonly fail to recognize the principle in geography, or hygiene. As a consequence children are commonly called upon to use general facts in the latter subjects which were never consciously developed and so have no meaning for them. Only the most confused thinking is possible under such conditions.

(b) *Sources of Materials or Facts.* The sources available for securing the necessary facts in the solution of problems are of several classes. The one most immediately at hand in every situation, the individual's experience, has been discussed. The importance of its use cannot be overestimated, for only in so far as it is used over and over will it come to be thoroughly unified, or systematized. Very frequently, however, previous experience will not suffice and other sources must be found. Such sources we have in the material world of objects and in the experience of the race as compiled in books or handed down orally. The importance of the material world as a source of information has been recognized long ago and observation lessons, or object lessons, have been suggested as a valuable means of acquainting the children with the world about them. The prevalence of the laboratory in the higher schools also indicates how valuable this source of information is considered for young people and adults. The point to be emphasized in this connection is that when experiences in a given direction are lacking, or are very limited, in number, this source is the most valuable of all that we may appeal to. It is here that relationships to be developed may be actually observed, that a certain process comes to be looked upon as a cause of another, and a certain change in a situation as an effect of some factor called a cause; that characteristics of objects come to be appreciated with

reference to their function. It is for this reason that home geography, nature study, etc., have so great a value in supplying children with facts or experiences in their respective fields. Here, again, it must be remembered that it is observation with reference to some vital purpose or problem that will enable the child to see the relationships of value, that will make the fact concrete or meaningful. The absence of such a purpose will leave the objective world as abstract as any group of symbols could possibly be.

Books constitute another valuable source of data. To obtain information concerning the world of things through symbols presupposes the necessary foundation of experience both with things and the symbols representing them. Unless the individual has both, so that the symbol readily suggests the real object, the symbol is unintelligible to him, it has no meaning. Now symbols may designate some specific object or situation in detail, or they may present an account in a more general or condensed form. In the former case children, who think very largely in concrete imagery, are enabled to associate the symbol with the image representing the object; they understand. In the latter case where concrete imagery cannot be readily resorted to the statement remains meaningless. Thus books may state in sufficient detail a fact so that a child may understand, or they may state the same fact in more condensed or abstract form, making it impossible for him to comprehend its meaning. In the former case only will the book be worth while as a source of information for the child. The use of general facts, or of condensed accounts, in books intended for children will be permissible only when there is a basis in children's experience for the comprehension of such facts. That text-books used with children in the elementary school are often seriously at fault in this respect may be shown by the following incident. A paragraph appearing in a geography text recently published was handed to a professor in a western university with the request to explain it. The professor, a doctor of philosophy, replied that he could not understand the paragraph and therefore was unable to do so. And yet the paragraph was intended for children of the fourth and fifth grades in the elementary school. If books are to be really worth while as sources of information the facts presented must be stated in a manner sufficiently concrete to connect with the experiences of those for whom they are intended and so to make ready understanding possible.

(c) *Number of Facts in Different Periods.* The number of facts

used by an individual for the solution of a problem, too, will be affected by his stage of development. Professor Dewey has pointed out that empirical thinking — that of children and untrained adults — is less thorough in its analysis of the problem, less careful in tracing connections of materials used for the solution, less expert in evaluating them, more likely to be wrong in its conclusions than scientific thinking; that it makes a “hurried jump from one consideration to another, allowing its (our) aversion to mental disquietude to override the gaps.”⁷ This implies that the empirical thinker when left to himself will not construct a closely reasoned answer to the problem before him. Not capable of thoroughly analyzing the problem into its elements and following up the inferences suggested at various stages, he does not require the numerous facts or materials which are essential to the scientific thinker.⁸ Illustrations of this kind of thinking are numerous in the everyday life of business, politics, and elsewhere, where fantastic solutions of problems, or theories, are advanced which are unsound largely, because not all of the “facts in the case” have been considered and evaluated. Illustrations of children’s characteristics in this respect are given in the third chapter of this discussion.

3. ARRANGEMENT OF FACTS IN DIFFERENT PERIODS

(a) *Stages in the Organization of Knowledge.* The relationships resulting, the organization established as a result of the solution of a problem, will differ in both comprehensiveness and quality according to the age of the individual, or his experience in a given field. The child will think of his cat as a pet to be played with; a pet that can climb a tree, catch mice, land on its feet when thrown in the air, swim to the shore when thrown in the water, defend itself against the neighbor’s dog, etc., and he may know enough about the structure and other characteristics of the cat to understand why it can do some of these things. The relationships here suggested are of a functional character and any one of them involves but a limited number of data. That this is the usual type of organization resulting in early childhood is borne out by evidence from psychologists upon the basis of children’s definitions.

⁷ *How We Think*, pp. 80, 145–156.

⁸ Children cannot manage any considerable number of facts in working over a problem. History teachers in the high school even have found that extensive use of source materials is impossible because of children’s inability to deal with large masses of data.

Meumann points out that the following stages of development are discernible in children's definitions: (1) the mere repetition stage, children merely repeating the term they are asked to define; (2) explanation of the term by stating its function; (3) definition by attempt to analyze and describe; (4) attempts at actual definition. Barnes holds that "young children define things almost entirely by their use; at eleven, definition by a larger, more generic term is well developed, as is definition by stating the substance of which a thing is made, while at fifteen most of the definitions for both sexes were by invoking the larger term." Kirkpatrick agrees on the whole with these statements but suggests that the larger terms which are first used at about the tenth year come to be used more accurately during the thirteenth year. Shaw found that "use was predominant at all ages and definition by the larger term, although it increased with years, was rare."⁹ Meumann, commenting upon the development of the meaning of terms, states that the logical capacities of children appear rather meagre, that they have no real understanding of the larger terms, that, for this reason, they comprehend the classifications of natural science relatively late, and that often they include things quite unlike under the same concept upon the basis of very superficial resemblances.¹⁰ Now since children's definitions are an indication of the organization of their knowledge, the conclusion stated above will be supported by this evidence from psychologists.

Not only does the organization of children involve but few facts and these of a functional significance, however; there is also but little interrelation of those facts which in adult experience would be causally connected. This is true to so great an extent that Professor Dewey characterizes such organization as fragmentary, as "an aggregation, not a system of facts."

In a subsequent period of development the individual will come to think of the cat as an organism that can breathe, digest food of certain kinds, catch its prey, reproduce, etc., and that for each of its functions there is an appropriate organ. Here the idea of the cat involves a great many more experiences, no longer of a superficial sort, and all of them are more or less completely knitted into the meaning of the term 'cat.' The 'concept' cat here has become much more completely developed than in the preceding period; the specific experiences of the earlier period and additional experiences since acquired have become interrelated. Rules, principles,

⁹ Cited in Hall's *Adolescence*, II, p. 486.

¹⁰ *Vorlesungen*, I, pp. 377-378.

general facts of various sorts come to be formed in this stage and come to take their part in the child's subsequent thinking. There is evidence both in the statements of psychologists cited above and in the illustrations of the next chapter that the upper grades of the elementary school mark the beginning of the period when this degree of organization comes to play a part in the life of the child.

Finally there comes a stage in the individual's intellectual development when he thinks of the cat not merely as an organism but as an organism related to a most comprehensive system of other organisms. Thus he will regard the cat, because of certain characteristics, as a member of the cat family, the genus mammals, and the phylum vertebrates. Here again we have a much more comprehensive organization and of a much higher order. Now the generalizations, or concepts, of the preceding period have become related into systems of biology, physics, ethics, etc. Such systems have been described as a form of organization in which a very large number of facts and ideas are arranged as a series of premises and conclusions, going by orderly steps from the general to the particular.¹¹ This degree of organization implies that (1) generalizations covering certain groups of phenomena have been consciously developed; (2) these generalizations are as accurate and as comprehensive in range as reflection can make them at the present time; (3) consecutive relationships are indicated by the use of deductive arrangements of materials, the order best suited for the purpose. This degree of organization is reached by comparatively few people and by them only in their special lines of endeavor.

(b) *Progress from Lower to Higher Forms of Organization.* "How shall the individual pass from the lower to the higher stages in the organization of knowledge? It was shown that the impetus to all organization of experience is the problem of vital significance to the individual; that with the increase of experience and maturity of the individual the problem gradually increased in comprehensiveness and complexity. Now corresponding to the increasing complexity of the problem there appears a more thorough integration of the facts used in its solution. Thus the early problems of the child which he himself answers are very simple, necessarily so because the judgment, or ability to think, available for their solution is but feeble at best. The resulting organization of experience is equally unsatisfactory, the child usually seizing upon one

¹¹ Dewey, art. "System," Monroe Cyclopedic of Education.

of the numerous elements in a situation only and using that for his needs. Since the number of problems with which he deals is considerable, the associations are made with numerous points¹² of contact and thus "these various bits of knowledge may lie alongside of each other in his mind for a considerable time before any necessary relation or connection is established between them."¹³ "What shall I feed my cat?" "How does it scratch me?" "How can it climb a tree?" etc., may give rise to the judgments "My cat likes milk, mice, birds"; "She scratches me with her claws"; etc. These facts may all be associated with the cat by the child but may be retained by him as so many isolated bits of information wholly unrelated among themselves. Later, however, such problems as the following arise: "Why does my cat have such ugly teeth and sharp claws?" "Why does Cincinnati manufacture shoes, furniture, pottery, tools and machinery, and pack pork to so great an extent?" Here not only will a considerably larger number of facts be needed for the solution of the problem than in the former instances, but interrelations between the facts used will be established. To solve the latter problem we may take the several manufactures of Cincinnati and find out the value of each. We may then inquire into the reasons why the particular industry has become a success here. We shall in this manner discover that Cincinnati manufactures iron goods because iron could formerly be obtained from the Great Lakes over the Miami Canal and now by way of the Ohio River as well as by rail. Since river transportation is cheaper than shipping by rail, the cost of securing the raw materials is not very great and the necessary materials are easily brought to Cincinnati. Here iron articles of various kinds are manufactured. An abundance of intelligent labor makes this possible. Because of the numerous railroads connecting Cincinnati with all parts of the country as well as because of her river connections, she can then ship her manufactured products to different parts of the country. The packing industry may then be studied. Why has this become important? Why does it flourish? Having previously studied the farm products of this region, the fact will have been noted that a great many hogs are raised in the territory within easy access of the city. These are shipped there over the many railroads extending out from the city in every direction. In the city the hogs are killed and made into hams, bacon, sausages, fresh pork, etc. Later

¹² Automatic organization accomplishes a similar result.

¹³ Lang, p. 46.

these products are again shipped to different parts of the country by rail and by boat. In this manner the more prominent industries of the city may be studied. The outcome of such a study would be something like the following. The partial summaries might be: Cincinnati makes iron goods successfully because she can secure both iron and coal quite cheaply by way of the Ohio River, manufacture this iron into articles of various kinds because she has the necessary workmen, and send out her manufactured goods to different parts of the country because of her many railroads. She has become an important packing center because hogs are raised in the surrounding territory and can readily be carried into the city by way of the railroads, where they are manufactured into meat. The meat is then shipped by rail and boat to various parts of the surrounding country. A considerable portion of it is consumed at home, etc. The final conclusion might be: Cincinnati can manufacture machinery, tools, shoes, meat, pottery, etc., because she can easily obtain the raw material out of which they are made and the necessary coal for power; she has the necessary labor for manufacturing and she can dispose of her products over the many railroads which connect her with the different parts of the country.

Here then, because of the nature of the problem, a considerable number of facts is related into a single unit of organization. Moreover, the facts used in the solution of the problem are shown to be related in numerous instances. Thus farming in this region is seen to be related to the packing industry, and the farmer is related to all of the city's industries as a consumer of her products. The river is seen to be of direct use to the city as a highway of commerce. The coal mines of Pennsylvania and West Virginia make manufacturing in Cincinnati possible. Clay and lumber in the Ohio valley make the manufacture of pottery and furniture possible. Cincinnati's excellent industrial schools make possible the training of intelligent workmen for her factories. These are a few of the many interrelations of facts established.

To solve the problem "What enables cities to carry on manufacturing successfully?" is a far more comprehensive task, involving the manipulation of a great many more data, their evaluation and interpretation, and leading therefore to a much more comprehensive organization than the problem just discussed. Such a problem could arise only after various cities have been studied in which the reasons assigned for the importance of certain industries vary. Thus it may have been found that in some cases the city is

located in the region supplying the raw materials. Birmingham, Alabama, and Birmingham, England, are cases in point. In some cases cities are far away from the source of raw materials; Trenton, N.J., importing clay for its pottery industry from England; Manchester, England, importing cotton from the United States, illustrate this point. Sometimes both raw material and fuel for power need to be shipped to the city as is the case with many of the New England cities. After these apparently conflicting facts have been discovered the problem arises. To solve it the facts already known must be harmonized and the tentative conclusion tested in other situations. Thus it must be asked, What is the advantage of nearness of raw materials? the answer being, of course, cheapness in securing the necessary supplies. Now if it is possible to establish the fact that sometimes materials may be carried over long distances at small cost — as in case of clay brought to Trenton, N.J., from England, — the explaining principle now becomes “raw materials must be procurable at a comparatively low cost.” Again some manufacturing cities are located on waterfalls and obtain their power from this source; others are located near the coal fields whence they receive their fuel for steam power; a third class is some distance from either water power or coal fields and must ship its coal some distance; while still others may use electric power. It is evident that no one kind of power is essential to manufacturing cities, but some power is absolutely essential to run the machinery. Here again it will be found that cheapness of power is a desideratum and that, other things being equal, the cities having cheaper power can manufacture goods most economically. In a similar manner children may arrive at the other factors essential to the success of manufacturing, the final generalization being that “Successful manufacturing cities must have an abundance of raw materials accessible, must have power in some form, must have means of transportation, must have markets, must have sufficiently intelligent labor and be able to secure the necessary capital to finance the undertakings.”

From this account it may be seen that it is by a continuous process of reorganization under stress of vital problems becoming increasingly comprehensive that the experience of the child comes to be organized more and more completely until system finally results.

(c) *Relation of the Several Stages of Organization to Each Other.* From the discussion of the preceding point as well as from the ac-

count of the manner in which relationships are worked out (Chapter I) it must have become evident that each of the successive stages in the organization of experience is essential to subsequent ones. Thus it was found that automatic organization played a significant part in giving rise to certain problems leading to conscious organization. The organization of facts resulting from the solution of problems of the 'concrete whole' was found to be essential in suggesting problems having for their purpose the development of generalizations, while the organization resulting from the latter type of problem will ultimately lead to the most comprehensive form of organization of experience, 'system.' Not only do the successive products of organization give rise to new purposes or problems, however; they also constitute the very materials to be used in the further organization of knowledge. Thus the significance of a good harbor, of good connections with the natural resources of the country, of the ocean as a highway of commerce, must be used in order to appreciate the location of New York as the cause of its growth. The early experience of the child with the cat is essential to his comprehension of the cat as an organism, while the youth's understanding of the cat as an organism is imperative to the man's conception of this organism as related to other organisms in the animal kingdom. To arrive at the higher forms of organization of knowledge, therefore, the individual must pass through the lower stages.

3. CONCLUSIONS

1. Problems leading to organization of experience differ in the several stages of development. Those prominent in the order named are the problem arising in connection with some physical activity the problem of the 'concrete whole,' the problem aiming at the building up of generalizations or concepts, and the problem leading to system.

2. Organized experience is an essential condition to the setting up of purposes, or problems, for further organization.

3. Materials to be of value in the organization of knowledge must differ in the several stages — even within a given stage when the amount and organization of experience differs in different fields. First-hand experience, accounts of concrete, specific situations, general facts and systems of facts and ideas indicate the kinds usable and the order in which they will be used. While the individual's experience should be first resorted to, further reorganiza-

tion of knowledge frequently demands the use of other sources. The material world offers the best source for the inexperienced and, therefore, for children. When books are used they should present facts in a manner intelligible to children who are to use them. The number of facts usable in any unit of organization will depend upon the maturity of the individual.

4. The degree of organization of knowledge attained differs in the several periods. The organization of young children is fragmentary, largely with reference to immediate use, and lacking in interrelations. With the beginning of about the grammar grade period specific experiences come to be condensed into concepts and interrelations are being consciously developed. The ultimate stage, that of system, marks the most complete organization of knowledge and is characterized by both number of experiences included and completeness of interrelations formed. Progress from one stage to another is possible only by continuous reorganization of experience under stress of increasingly comprehensive vital problems. Each stage is essential as a basis for further progress in that it must supply both the purposes, or problems, inducing subsequent organizations, and, in a measure, the materials with which to develop them.

CHAPTER THREE

ORGANIZATION AS A FACTOR IN CHILD LIFE

I. HOW ADULTS MEET DEMAND FOR ORGANIZATION RECALLED

IN the preceding chapters an attempt was made to show how the mind organizes its experiences. Adults, it was there said, organize under stress of a vital problem. Such problems vary in comprehensiveness and in closeness to 'practical' affairs of life, but they are always an outgrowth of the individual's experience and are intimately related to some need. To solve such a problem facts are selected upon the basis of their relevancy to the problem and are drawn from (1) the experience of the individual, and (2) other sources, in sufficient number to satisfy the individual that the problem is satisfactorily solved, the organization complete. The mere presence of the facts chosen does not constitute a solution of the problem; they must be so arranged as to indicate clearly how they contribute to the surmounting of the difficulty. In case the principle necessary for the solution of a problem has not yet been established, the inductive arrangement is followed, the selection of a sufficient number of representative facts upon which the principle in question may be based; when, on the other hand, a problem is to be solved and the necessary principle, or principles, are in the experience of the individual the deductive arrangement is followed. In the latter case the principles may be introduced at once and the facts bearing upon the case later, the chief task being to show that the present problematic situation is satisfactorily explained by the principles stated. The nature of the facts recalled for the purpose of solving a problem depends upon the degree of organization of experiences which the individual has attained in the given sphere. Thus either a single concrete experience, a concept representing the essential elements of a number of concrete experiences, or a comprehensive system of knowledge vast in extent and compact in organization may be resorted to for this purpose. The organization of an individual's experience becomes more and more compact, unified, systematic in so far as problems increasingly complex are successfully solved.

In the present chapter we shall attempt to show the extent to which children conform to the methods of the adult in this respect. Is organization a factor in child life? If so, how do children organize? Do children conceive problems? How do they arise? What is their nature? What is their method of solving them? What is the nature of the experiences which they resort to in solving them? In what form do they recall their experiences? What is the nature of the resulting organization?

2. EXTENT TO WHICH CHILDREN CONFORM TO THE PROCEDURE OF ADULTS IN MATTER OF ORGANIZATION

(a) *Does Organization Play Any Part in the Lives of Children?*

A little boy¹ five years old found out that his grandfather, whom he occasionally visited, never left the house without his hat on. The reason for his grandfather's custom was his extreme baldness. The boy intimated that it would be great fun to get his grandfather to go out without his hat; but how to do this was the question. He observed that the baker called at the house daily and that the grandfather usually was the one to go out to the street to buy the bread. At such times he noticed that he must hurry lest the baker drive on. The boy therefore decided that this would be his opportunity. Consequently on a following day, when the baker again appeared, grandfather's hat could not be found and he had to go out to the street without it.

Three little girls were seated on a window seat looking out of the window. One of them quite accidentally spilt a box of buttons. A boy, D., eight years old, who had observed the spilling of the buttons, immediately insisted that P., the little girl, pick them up; P., however, refused to do so. How can she be made to pick them up? She wants to continue to look out of the window with the other girls; he therefore attempts to prevent her from doing so by pulling the shade. But this is a matter of indifference to her since her companions also suffer the same punishment, and she tells him so. D. therefore tells the two girls not concerned in the difficulty to go to another room to look out. When they do so P. attempts to go with them but is headed off by D. She then picks up the buttons and is permitted to leave the room.

A group of about ten children,² most of them in the fourth grade, devised a new mode of using the playground slide. Instead of going down feet first, according to custom, it was decided to go down head first. To keep from getting hurt the children agreed that the person sliding down should be caught by the one who had gone before. No child made the descent before she had assured herself that some one was there to catch her. Only once a girl forgot to wait at the foot of the slide until the next girl came down, but she was promptly recalled by the latter. Each girl awaited her turn in great orderliness.

¹ I am indebted to Miss Blanche McDill, of the Teachers College, Miami University, for this account.

² I am indebted to Miss Anna J. Beiswenger, of the Teachers College, Miami University, for this account of the incident.

These illustrations of children's organization of plans of procedure could be duplicated many times; they will suffice, however, to show that children, like adults, organize. That their mode of organization is quite similar to that followed by adults will be shown in the later pages of the chapter.

(b) *Why Do Children Organize?*

The first example above is an illustration of organization during the pre-school period. The child here organizes a mode of procedure because he wishes to accomplish a certain end which seems very much worth while to him. To see the grandfather go out to the street bare-headed would be great fun indeed. However, while this outcome is eagerly desired, the way to accomplish it is not so clear; no ready-made plan is at hand waiting to be carried out. The end to be attained, in other words, involves a difficulty to be overcome, a problem to be solved.

Examples two and three are illustrations of organization during the school period but in connection with out-of-school affairs. Here again practical ends are to be accomplished and in both cases they appear worth while. D. knows from previous experience that unless he can get some one else to pick up the buttons the task will be his; or, possibly, he wishes to punish P. for her carelessness. In the case of the girls and the slide a new form of play is to be enjoyed; a form, too, quite out of the ordinary and, therefore, all the more desirable. In neither case is there an acceptable plan at hand; both ends involve problems. In out-of-school life, therefore, whether before the beginning of the school period or after, that which induces a child to organize experiences consciously is a definite, vital problem.

(c) *What Is the Nature of Problems which Impel Organization?*

Both in pre-school life and in out-of-school life during the elementary school period the problems appear to be largely those relating to some practical interest of the child. How to get Grandfather to go out bare-headed, how to get P. to pick up the buttons spilt by her, how to use the slide in a new way, all illustrate this fact. The problems which arose in connection with the building of the boat stated below are also cases in point. This is precisely what one should have expected; the most characteristic thing about children is their activity, not their tendency toward speculative

thought. Their thinking and organizing will therefore be done in connection with their activities.

It is rather difficult to get any information worth while upon this point from children's work in school. Our school work in most places is not so arranged as to take into consideration children's native tendencies; if it were we should undoubtedly find that children's thinking and organizing in school is done under the same conditions as outside of school. Even when children are urged to state those problems only which they would really regard worth while in connection with a given situation they hesitate to do so and frequently mention some which in their previous experience have been approved as 'proper.' The problems stated below are therefore problems which children give as worth while for discussion when recognizing that they are working under school conditions.

"Did the boy get his meal back?" and "How did he get it back?" were the two problems suggested by a group of second-grade children who had been told the story of the Northwind up to the point where the boy says, "I will go after the Northwind and make him give me back my meal." "Why were the Indians so friendly to Marquette and Joliet when Boone always had to fight them," was suggested by a fifth-grade boy when studying Marquette and Joliet's explorations after having previously read the story of Boone. Upon the basis of the paragraph on Colorado given on pages 62-63 the following problems were suggested by a fifth grade: "Why do people go to Colorado for their health?" "Why do they raise so many cattle?" "Why does it rain so much more in Ohio than in Colorado?" "How does it come that with so little rainfall and such a dry climate, it can raise so many farm products and fruits?" "Why do people go sight-seeing to Colorado rather than to other states?"

Having been asked to read the paragraph on Canada on page 64 and to write down any questions or problems which the paragraph suggested to them, or which their knowledge of the subject might suggest to them, a seventh grade wrote the following questions: "Why do Americans go to Canada thinking they can make more money than in their own country?" "What makes so many people want to go to Winnipeg?" "Why is Winnipeg located where it is?" "Why is Winnipeg a close rival of Minneapolis?" "Why is the land between Lake Erie, Lake Huron, and Lake Ontario the best land in Canada?" "Why is the land just beyond the United States boundary north of Minnesota and North Dakota so valuable?"

"Why do they want to belong to England? (I should think they would want to be a free nation.) England was mean to us. Canada is large. We fought to be a free nation; it looks as though Canada would." "What makes Canada excellent farming country?" "Why is the soil rich in certain places and not in others?" "Why is the best farming land around the lakes?" "Why has Winnipeg grown so large?" Other questions raised by the children without the assistance of the paragraph were: "How big is Canada?" "What does she manufacture?" "When was Canada founded?" "What are some of the large cities?" "Do we trade extensively with Canada?" "Will Canada's wealth aid England in the war?" "How important is Canada to England?" "In what wind belt is Canada?" "Is Canada favorable for farming?" "What conditions favor wheat-raising in Canada?" "How does Canada rank as a manufacturing country?" "How does Canada aid England?"

An examination of these questions reveals the fact that they may be classified as fact questions and problem questions; and again they may be divided into those suggested by certain type questions of the teacher and others original with the pupil. As illustrations of fact questions we have the following: "How big is Canada?" "What does she manufacture?" "What is the climate of Canada?" "What do they do in these cities?" and others. As illustrations of problem questions we have, "Will Canada's wealth aid England in the war?" "How important is Canada to England?" As illustrations of questions previously asked by the teacher there are the following: "How important is Canada to England?" (A question raised in connection with other colonies of Great Britain.) "In what wind belt is Canada?" "What do people of Canada do to make a living?" "What kind of soil has Canada?" "Is Canada favorable for farming?" "How does Canada rank as a manufacturing country?" The question, "Will her wealth aid England in the war?" is illustrative of a question original with children and happens to be the only one given by children when no data were supplied.

The questions which the children asked upon the basis of data given were decidedly more worth while from the adult point of view than those for which they had to appeal to their knowledge of the country. The former were usually problem questions; the latter were commonly fact questions. This is not at all surprising when one considers that ability to ask good questions implies well-or-

ganized knowledge, in the absence of which children resorted to certain well-known stock questions to avoid appearing ignorant. The questions asked upon the basis of data were very similar to those which an adult would think of when reading the same paragraphs and which he would think worth while solving. There are questions such as, "Why is Colorado good for one's health?" "Why can they raise so many cattle?" and "Why do the Americans think they can make more money in Canada than in the United States?" which seem to have a rather practical significance in adult life. Again there are such questions as, "Why does it rain so much more in Ohio than in Colorado?" "Why does Canada want to belong to England?" etc., which are of a more theoretical nature but which because of our geographical and historical knowledge and certain interests we regard of sufficient importance to think about and which to the children appeared undoubtedly very practical. Children in this instance, therefore, indicated problems of a possible practical significance in practically every instance as worth while suggesting for solution. Is it significant that the only problem clearly original with children among the several questions stated on Canada without data was a practical one?

(d) *How Do Children's Problems Arise?*

Here again we find a very close resemblance between children and adults. The unusual practice of always putting on his hat when leaving the house together with the interest in making him perform suggested to the little boy in the first example above the desirability of making the grandfather leave the house without it. A physical difficulty arose when the buttons were spilt, giving rise to the problem, How to avoid picking them up, or, How to get P. to pick them up. Recognition of the undesirability of the task in the light of former experiences suggests the problem in the latter case.

The following illustrations are taken from school work and will show how problems here arise, spontaneously — as in the first instance — and how they may be made to arise by appropriate arrangement of data.

"The fifth grade children were reading the story of the discovery of the Mississippi by Marquette and Joliet. The account told of three different tribes of Indians whom they encountered, the Wild Rice Indians, of the Fox river, the Illinois on the west bank of the Mississippi, and the Chickasaws on the Mississippi below the mouth of the Ohio. All these Indians were friendly to the explorers. One boy T. remarked that he didn't see why all these Indians were friendly to the white

men and asked for information on this point. When asked what suggested the question to him he said, "Well, it doesn't seem possible that they could meet so many Indians and have them all friendly. Boone in Kentucky didn't meet any friendly Indians. He was always having to fight them."³

A teacher told the story of the Northwind to a group of second grade children up to the point where the Northwind takes the meal from the boy three times. The boy at this time says, "I will go after the Northwind and make him give me back my meal." At this time the teacher asked the children what they wished to know most. The children very promptly replied, "Did the boy get his meal back?" and, "How did he get it back?"⁴

A fifth grade was asked to read the statement concerning Colorado given below and to state (1) What problems or questions this account suggested that would be of interest to them; (2) what other questions or problems they would really be interested in finding out about; and (3) how they happened to think of these questions.

The statement: One of the western states in which people from our section have been greatly interested is Colorado. Many have gone there for their health; some to establish cattle ranches; others for sight-seeing and play during the summer months.

Colorado is very mountainous, for the state is crossed by the greatest mountain range of North America, the Rocky Mountains. The climate is much drier than in Ohio; for while Ohio has an average rainfall of about forty inches Colorado's ranges from between five and ten inches in the western part to between ten and twenty inches for most of the remainder of the state.

In spite of the limited rainfall, however, Colorado produces many of the necessary foodstuffs in considerable quantities.

Thus the principal crops for 1899 and 1909 were raised in the following quantities:

Product	Amount (1909)	Value	Quantity (only 1899)
Total orchard fruits	4,565,849 bu.	\$4,651,792	354,049 bu.
Apples	3,559,094	3,405,442	257,563
Peaches and nectarines	692,000	764,000	47,000
Plums and prunes	81,000	81,000	15,000
Pears	132,000	210,000	19,000
Sugar beets	1,231,712 tons	6,061,153	6,656
			Acres in 1909
Corn	4,903,304 bu.	2,573,584	326,559
Oats	7,642,000	4,177,267	276,000
Wheat	7,225,000	6,463,000	340,000
Barley	1,889,000	1,100,753	71,500
Beans, peas, flax seed and cane seed	334,965	549,000	32,878
Hay and forage	2,241,000 tons	17,282,000	1,285,000
Cattle of all kinds	1,158,235 heads	32,409,653	
Feed bought by farmers (corn, oats, barley, etc.) in 1909			\$4,593,000
Feed sold by farmers (corn, oats, barley, etc.) in 1909			5,010,000

³ I am indebted to Miss Anna J. Beiswenger for this account.

⁴ Miss McDill reported this illustration to me.

Some of the questions suggested by the children were given on page 35; they will not be repeated here. Others were: "Why do they raise so many apples and why do they get so much money for them?" "Why do farmers buy their feed when they can raise it?" "When the people go for play where do they go?" "What do people see when they go to see?" "How long does it take to go up a mountain and how can you go?" "How does it come that the price of the feed sold by the farmers is so much greater than the price of the feed bought by them?" "Why has the quantity of fruits, grain and vegetables grown so since 1899?" "How does Colorado raise so much food and crops when there are so many mountains?" "Why do people go sight-seeing to Colorado rather than to other states?" "Why are people interested in Colorado?" "Can they raise all grains and fruits and vegetables on hilly land?" "Why did the farmers buy feed?" "How can cattle live with hardly any water?" "What does Colorado do with these things?" "Why did the farmers sell their feed and then buy more?"

The following statement regarding Canada was placed before a seventh grade with the same request to suggest problems which was made of the fifth grade.

"There is much excellent farming land in Canada. On the peninsula between Lakes Erie, Huron, and Ontario, is some of the best land in Canada. Just beyond the United States boundary north of Minnesota and North Dakota there is a strip of farming land several hundred miles wide. In this section of Canada many Americans have settled thinking that they might find better opportunities for making money than in their native country. Within less than seventy-five miles of the Minnesota boundary Winnipeg, the largest city of Canada west of Toronto, is located. It now has a population of about 150,000 and is a close rival of Minneapolis in some respects."

The questions which the children formulated were stated on page 36 and need not be repeated here.

From the foregoing it will be seen that in the life of the child as in the life of the adult problems arise when the individual's experience is inadequate to meet a new situation which the individual feels must be met, or when the different elements of his experience appear to be contradictory in nature and so block the way to the attainment of some end thought desirable.

(e) *How Do Children Deal with Problems When They Arise?*

A little girl five years old attempted to make a doll dress. She proceeded at once to cut the cloth, sew it together, and then to put

it on, only to find that the dress was too small. To make the dress would usually be looked upon as a fairly difficult problem by a more experienced person; the little girl seemed to have no appreciation of its difficulty. There were no previous measurements, no planning of the style of the dress; the whole procedure savored much of the method of trial and error.

In case of the problem of the spilt buttons the procedure is very different. In the first place D. appreciates his problem very keenly; it means very much to him to escape picking up those buttons. In the second place he quickly advances an hypothesis, namely, that if P. could be kept from looking out of the window until she had been compelled to pick up the buttons she would probably pick them up in a very short time. Upon this hypothesis he acts. When it fails he modifies his procedure and attains his end. There is in this case a very clear conception of the problem, a well-chosen plan of solving it, an attempt to try out the plan and to modify it sufficiently to attain his end. Here the whole procedure is very much in accord with what an adult might have done — at least as to form.

A third illustration is given because of the light it throws upon the mode of procedure in the solution of a practical problem by boys thirteen and ten years old.

The problem in this instance was, How to build a boat for use on a nearby creek. The first question arising in connection with the building of the boat was how to get plans or instructions. Th., the younger boy, recalled having seen the plan of a boat in a magazine. The magazine was looked up and the plan there suggested, after some modification, was adopted. The next problem was, How to get the money for the material. Each boy had some money. It was decided to earn the remainder necessary by mowing lawns. When asked why this kind of work was chosen one of the boys replied that this was the only way open — probably suggested to them by the fact that other boys were earning money in this manner. The next problem which arose was, What kind of lumber to select. Here the advice of one of the fathers was asked and accepted. How to make the boat, was the next problem. Here the plan was frequently referred to and assistance was sought from time to time from the father of the older boy, both in the matter of interpreting the plan and executing some of the more difficult parts of it. When the carpenter work on the boat was completed it was decided that it must also be painted. The treasury was low at this time and economy necessary. The boys therefore decided that both hardware stores should be consulted on the price of one quart of paint before any purchase was made. In this manner five cents was saved. When the boat was completed the problem of how to take it to the river arose. A neighbor offered to haul it down but his offer was not accepted because it was thought inadvisable to leave the boat at the river, which would have to be done in that case. One of the parents then

suggested that a two-wheeled cart might be made or purchased for the purpose of hauling the boat to and fro. The cart might be hitched to an automobile and the labor of pulling it reduced to a minimum. A search for a cart was now instituted and a very acceptable one found in a very short time. When the owner stated the price this proposition was promptly rejected. Before a complete plan for the care of the boat had been devised the fourth of July was at hand and the parents of the boys had decided upon a picnic at the river to celebrate the day. The boys therefore decided to haul the boat to the river upon two coaster wagons. While at the river the question arose as to what to do with the boat for the night since it could not be taken back very conveniently that evening. This suggested the plan of leaving it at the river permanently and of interesting the engineer at the pumping station in caring for it. It was thought that a small financial remuneration would accomplish this. It was found, however, that there were three engineers at the pumping station during every twenty-four hour period and a financial consideration which might interest one would hardly interest three. This plan, too, was discarded. Since it had become dark meanwhile it was decided to hide the boat in the bushes for the night. The following morning the boys decided to fasten it near the pumping station with chain and lock and leave it there permanently if this method proved safe.

In the solution of this problem, or series of problems, the methods of the adult are suggested at every step. With the problem before them the boys advanced their suggestions for solution, tried them out and, rejecting those that failed in some way to meet their situation, they accepted the more adequate. They appealed to their own experience when devising some mode of raising the necessary money for the purchase of the materials and for the final method of carrying the boat to the river. When experiences of their own were lacking, as, for example, in the choice of the lumber, the planning of the form and the details of the construction, they appealed to their parents and to printed plans. During the entire process there was also a very definite subordination of the whims of the moment to the most satisfactory outcome — the construction of a well-built boat. In one respect, however, there was a most decided difference between the procedure of the boys and that of a rational adult. At no point during the process of construction did there seem to be any tendency to consider more than the immediate next step. The building of the boat, apparently one problem to the observer, became in reality a series of problems each of which was considered wholly by itself. There was no thought of paint when lumber was purchased and consequent disappointment when the cost of paint was found to be so great. There was no thought of a means of carrying the boat to the river when completed, or of a boathouse, or of a chain with which to fasten it until the need for

these things was actually present. And yet this is exactly what one might have expected from boys who lacked wholly, or almost wholly, any experience in boat construction and the care of boats. In fact, this inability to foresee in full the various minor problems that are likely to arise in connection with the solution of a more comprehensive one is not at all uncommon with adults and varies inversely as the individual's experience in the field concerned. It would seem then that there is a close resemblance in methods of organization of school age in out-of-school activities and adults; certainly the more refined methods of the adult are foreshadowed in the methods of the two boys of the last illustration. Does this conclusion seem warranted with reference to the organizing activities of children in school work?

3. HOW CHILDREN DEAL WITH PROBLEMS IN SCHOOL

It is somewhat difficult to secure spontaneous mental reactions in school because of the more or less formal nature of the teaching process. The problem very often is not as vital as it should be; the teacher's method of procedure is such, at times, that it interferes with the thought processes of pupils. For this reason the illustrations and inferences based upon them are probably not as instructive or conclusive as those previously given. They probably do not represent the children's best efforts, in spite of the fact that an attempt was made to arrange conditions as favorable as possible.

The problem concerning New York stated below was raised in class discussion with a group of children belonging to the fifth grade. The children were then asked to work out an answer in any way they thought they could do this most successfully. As was to be expected, the children differed greatly in method of work and in the soundness and completeness of the answers which they succeeded in working out. The immediate problem before the class was, What are the different ways by which people can make a living in New York City and which have caused so many people to go there? Several of the papers and the teacher's comments are given in full.

Of the boy who wrote the first paper the teacher observed:

"H. found the page where the subject (New York City) was discussed, but said he didn't see the connection. Later he turned from the book and wrote his own ideas, referring to the book later only to corroborate them."¹

¹ This boy attempted to write on the more comprehensive problem first suggested by the class, "Why has New York become so large a city."

H.'s paper follows:

"New York has become larger because of the Erie canal. They could bring things from the wheat region and they could build flour mills and elevators. (2) New York City became large because she has great packing houses for she can get meat to dress from the great plains by water or by rail. It would be by rail to Chicago and then by way of the Great Lakes and through the Erie canal to New York. (3) New York City has grown to be a large city because of Columbia University. For people would come to go to college. (4) New York City has become large because of the good harbor. They can send wheat and meat and other things to Europe and New York can receive goods from Europe. (5) New York could manufacture iron and steel goods, for she could get iron ore from the Superior region by way of the Great Lakes to Buffalo and from Buffalo to New York by way of the Erie Canal. (6) New York has become a large city because she manufactures a great many shoes, for she has a great many tanneries where they can tan leather out of hides sent from Europe. New York City makes a great many shoes out of the leather that is tanned in the city."

Of the boy writing the second paper the teacher says: "T. looked at the maps showing the distribution of products." His answers seem to indicate that they are based chiefly upon product maps. The paper follows:

"People come to New York because they can work in the factories. (2) The factories are here because they can get things to manufacture by way of the harbor and big railroads. (3) New York can get iron ore from Duluth by way of the Hudson river, then by way of the Erie canal to Lake Erie, then to Duluth by way of the Great Lakes. (4) New York can get meat and cattle from the great plains. It is first shipped to Chicago by train, then by way of the Great Lakes and Erie canal and Hudson river to New York where the cattle are killed and dressed. The hides are made into shoes and other leather things. (5) New York can get wheat from Minnesota by way of the Great Lakes and the Erie canal and Hudson river. In New York it can be made into flour or the wheat can be shipped to Europe. New York can get lumber by train to make into boards."

The boy who wrote the third paper depended upon the information which he could glean from the product maps, text, and reference books. "He kept looking for pages where he had seen something about New York." The paper follows:

"(1) New York has grown to be so large because there are more students coming there to the university every year. (2) There are people coming into New York for work because there is plenty of work to do and men need work. New York can get coal from eastern Pennsylvania, iron ore from the Lake Superior region, and limestone from Ohio or Indiana and they need men to run the machines to make the iron and steel goods. And she has a good harbor to send the things away. (3) The people come to New York to get work at manufacturing iron and steel goods. People come to New York to run a dairy farm to help furnish New York with milk and cream."

The teacher of the children summarizes their procedure as follows: "The children consulted their geography text-books and in four or five instances other books. They consulted product maps and physical maps. They recalled previous geographical experience and tried to make application (sometimes wrongly). They used personal experiences from life outside of school. In some cases they thought out the answer."

In this grade children do not seem to be conscious of the fact that their suggestions toward the solution of a problem are merely suggestions. At times they put them in phraseology to indicate that they do realize this, as, for example, H.'s use of 'could' instead of 'do' in two instances. The fact that H. wrote out his answers and then consulted the text to verify his statements would seem to indicate that he looked upon his statements as being assumptions which needed verification. In general, however, children of this grade, in so far as tested, seem inclined to offer their suggestions as reasons and let the teacher settle the matter. Possibly this may be accounted for by the readiness of teachers to indicate immediately when an answer has been stated whether it is right or wrong. The pupil is thus relieved of all responsibility in the matter.

The experiences used are of various kinds. There are first certain experiences of a local nature which played a part in the answers of the children. The home town is affected very much by the presence of a university and two colleges. The total school population increases the population of the town about fifty per cent. Consequently, the children felt that a similar situation must exist in New York City where they found a large university located. Again the children used their geographical knowledge fairly successfully. Up to this time in their course no attempt had been made to formulate definitely the conditions essential to a successful manufacturing or trade center. A number of cities had been studied, however, in which concrete illustrations of these conditions had been discussed in relation to the cities' industries. The children, therefore, use very intelligently such concepts as "access to raw materials," "good transportation facilities," etc., without calling them by their technical terms. The number of data used is disappointingly small; this was to be expected in this grade. A considerable number of children consulted the text-book and reference books at once and were satisfied when they had copied what to them seemed satisfactory answers. A similar procedure was observed in the seventh grade of another school where a similar test was given. Children

very generally ignored their experience and threw themselves helplessly upon the text-book, copying answers thought suitable but adding nothing from their previous experience.

Because of the nature of the problem before the class there seemed little opportunity to test the pupil's ability to arrange materials.⁵

In order to determine what children would do with a problem under the direction of a teacher, the same fifth grade was asked to discuss with the writer one of the problems stated by the children in connection with the paragraph on Colorado, "Why do the people of Colorado raise so much grain and food?" The account of two lessons was prepared by a stenographer; it is slightly abridged in places but on the whole represents the procedure fairly accurately. As far as possible children were left to their own resources in the discussion, the teacher making a suggestion only when awkward pauses occurred and the children seemed unable to go on. No summaries were called for.

The account of the lessons. "Why do the people of Colorado raise so much grain and food? We tried yesterday to answer this question but did not succeed very well. How do people in Colorado manage to raise so much grain, corn, sugar beets, etc., when it is so dry there?"

Th. Because farmers irrigate their fields. Sometimes they have pipes with holes in; water runs through drop by drop to the ground. They also dig ditches and water runs through them. (*This apparently settled the matter for the class.*)

T. Do you wish to ask Th. how you get the water into the pipes?

C. They would have to have much water for each field.

H. How do you get all over the field? It would take a good many pipes and a lot of holes to let the water out.

T. Th., did you ever see them do this?

Th. Down south last summer. They also flood rice fields in the south. Large fields are irrigated by use of ditches.

T. You think in a large field it is best to use ditches?

Th. Yes.

T. How would you get enough water?

Ch. They might have a creek of their own on the farm.

C. Every one would not have a creek.

M. They have reservoirs at the foot of the mountains; snow melts and runs down into the reservoir and then they get the water from the reservoir.

T. Does that sound all right?

C. How would they get enough snow for water in the reservoir?

M. This water comes from snow caught in the reservoir in the spring. The snow melts in the spring.

⁵ The children interpreted the problem to mean that a number of ways of making a living should be enumerated and explained. They do not as yet realize that the principles which they use in each case are comprehensive enough to explain the problem as a whole.

C. There is not enough snow to supply reservoir with water.

Ch. How would the melted snow get into the reservoir?

M. The snow melts, then flows down the mountain sides into the valleys between, and then is caught in the reservoir.

B. We don't have reservoirs all around the mountains. If they have a creek near they use that instead of the reservoir.

Ch. If the creek is some distance pipe and dig ditches to the farm.

T. Let us read our geographies and see if this is true. (*Children read that M.'s statement regarding the reservoir is correct.*)

C. If there was a river in the mountains the snow might melt and go into the river.

T. M.'s statement is true, therefore. How will the water be gotten from the reservoir to the farms?

B. Dig trenches in the mountains. Between the mountains is usually a valley; the water runs down into the valley and then into the reservoir at the foot of the valley.

J. There is always a river in the valley. Water flows into the river and then down into the reservoir.

T. The purpose of the reservoir then is to hold water between rains.

C. What if the reservoir got empty?

M. There is snow the year round on the mountains; there would always be water.

T. Here is a farm; there is no water at the farm but there is plenty three miles away at the reservoir. How shall we get it to the farm? (*At suggestion of T., children now pass to the sand table. Here mountains, reservoir, valley, river and farm lands are represented and children are asked where they would prefer to have their farm located if they had one. One boy suggests that he would have a farm on both banks of the stream.*)

T. If farm is on both sides of the creek how would you water it?

B. Dig ditches on either side.

T. Water runs easiest down the river bed; is it easy to get water onto the farm? Will it flow up the sides of the plain?

Chn. No. We can't change river. To send water up hill we would have to force it.

T. We want to water the farm on both sides as far as possible.

B. Cut in ditch, let water flow through this way (*pointing toward slope*).

Ch. Object on account of slope. Ditches might be built around farm.

T. Think, boys, of a piece of ground with ditches around it; what would be the objection to watering the farm this way?

B. It would take three years to do it; they would be digging ditches all the time. It would not pay a farmer to do this; it is too expensive. It would cost more than the ground is worth.

T. We must think of something else, then.

C. Use pumps and force the water up to certain places in the field into ditches; water would then flow from ditches between rows or furrows.

T. What objection would there be to this plan?

Ch. Too expensive to pump the water.

T. The question is how to get the water onto the farm.

C. The river might be dammed up to raise the water high enough.

T. How high would your dam have to be to raise the water high enough for farms some distance from the dam?

Children see that farms near the dam would be flooded while others would have barely enough water. Project would be impractical for other reasons.

T. This then will not work.

Ch. They could have pipes and let the water run down out of the pipes. Pipes might run to wells on farms and they might fill well and then pump it up.

T. How high would the water rise in the well if brought there from the river near by?

Ch. No higher than the river.

T. Would this be satisfactory then for irrigating?

C. No, farmer would have to pump water out of well.

T. Well, do you have any other suggestions?

Children. (*addressing teacher*) What do you say about it?

B. Pipe water onto farm at high edge, along to farm and into ditches.

T. This is exactly what is done. (*Teacher explains more fully.*)

H. What about other people's water from the river?

T. How will people over here — farther down the valley — get water?

C. Shut the gates and let it go to the next field. They could make places to shut the water off. Gates could be closed and opened; close some gates and open others.

T. How could water be admitted to each farm?

B. One gate to large ditch. There is plenty of water for all farmers.

H. First farm has a sluice made with one opening; opening this it admits water to the farm, to furrows between vegetables. When he has all the water he needs he closes the water gates.

Chn. Water would not run high enough to let it run over. Let it run in here (*shows in sand*). He could fix it to lower and bring gate up when he wants to.

T. Did you ever see such a gate?

Ch. Yes, at mill; it runs mill and the miller shuts it off when he wants to. Have the ditch deep to raise and lower the gate.

T. Now do you have any questions? (*No questions*) Farm lands on this side are \$40 and \$50 an acre; over here in the unirrigated parts land is worth \$6 an acre because people cannot get water. Where then should the main ditch be placed?

B. We want the ditch on the highest part so that water can run down into the fields.

T. We want every farmer to get as much water as he is entitled to.

C. If you could raise and lower your gate what difference would that make?

B. Have enough water for field and then shut it off.

Chn. Object. One farm might have all the water it needs and the farms below might not get their share.

T. How could this be controlled?

B. Measure water.

(*Teacher then explains the manner of controlling water rights.*)

In this oral discussion children appear more careful in advancing suggestions. Influenced probably by the teacher's attitude as well as by the criticisms of contributions by their classmates they appear quite cautious. Judging by the wording of their contribu-

tions to the discussion there are many hypotheses quite definitely suggested as such as there are statements which evidently should have been given as hypotheses, but which were stated in the form of facts instead. Possibly in some of the latter cases the difficulty is one of language rather than of thinking. (2) Children do not try out the suggestions made in any thorough manner — not at all in some cases. Thus they were perfectly willing to accept the first statement of Th. as final. Digging ditches from the river to the farms located on higher ground, watering farms by means of a dam, watering them by means of wells, etc., would have passed as acceptable to them with the sand table before them. Lack of experience in this direction is of course one reason for this lack of thoroughness in their thinking. (3) The hypotheses advanced are but limited in scope. A principle thoroughly well known to each one of the children both from out-of-school experience and from school training, that water without the application of force will move only from a higher to a lower level, was never thought of, apparently, as explaining the entire problem before the class. While it served to check the suggestions made from time to time it did not control the thinking of the children to any considerable extent. (4) The nature of the experience offered in the solution of this problem is usually concrete. Irrigation is suggested by Th. because he has seen gardens irrigated in the South. The experience with the rice field is of the same type. Experiences with creeks and ditches again seem to be advanced because of specific instances which children have come across, of creeks running through the land and watering, not lands, but cattle. Only one child resorts to text-book for information. No principle is suggested by the children in their work upon this problem. (5) The way to the final solution is extremely roundabout.

The seventh-grade children who suggested the problems on Canada cited on page 35 of this chapter were requested to select any one of the problems and attempt to work out its answer, first without aid of any kind, and later with the assistance of text-book, reference books, or teacher, as they saw fit. Two of the papers written — both without assistance of any kind — are given below.

D.'s paper:

"Why has Winnipeg grown so rapidly? I think Winnipeg might grow rapidly because she is in a good situation. She might be on a good river where transportation is good. There might be minerals found around there, such as coal and iron which could be manufactured there. There might be good farming land

near Winnipeg as there is in the section around her. Winnipeg might be an easy city to reach if people from other countries are coming over. It is perhaps a beautiful city and people would come over for rest and scenery and get to liking it and stay. It might be the capital of Canada."

The part of paper written with the aid of book:

"Winnipeg is on a branch of the Albany river where she has good transportation. It is the most important farming region in the dominion. Tarr and McM. 162. Winnipeg is in the midst of the wheat region. Flour is manufactured there."

R.'s paper:

"Why are the people of the United States going to Canada to farm when the soil of Minnesota and North Dakota is so well suited to wheat? The people who live in the more thickly settled parts of the United States do not get the chance to farm. The land in Minnesota and North Dakota is fertile and very good for wheat raising but it is also very high priced.

"The land in Canada is not nearly so well settled as that of Minnesota and North Dakota. This makes the land sell much cheaper and still it is a very good land for farming. So the people of the United States prefer to buy the land in Canada for farming to that of Minnesota and North Dakota."

There seems to be in both cases a rather clear conception of the problems to be worked out. The first part of D.'s paper is a series of hypotheses based upon certain principles which have been frequently applied in connection with the study of other cities. These principles are named in some cases, as, for example, "situation," "transportation"; in other cases they are implied, as, "there might be minerals found around there" evidently has at its basis "access to raw materials." There seems to be a definite attempt to use experience of a conceptual nature. There is also a fair sequence of hypotheses; location, transportation facilities, natural resources, and artificial attractions are suggested in order. In the second part of the paper it appears that an attempt is made to establish the hypotheses of location, transportation facilities and natural resources.

In the second paper no hypothesis is definitely stated. R. assumes, however, that "good land probably can be bought at a lower price," and bases his argument on this idea. While he assumes the principle, "Value of land increases with the increase of population," and uses it in his reasoning, he does not state it as such. A conclusion is definitely arrived at and stated. The facts essential to the reasoning are well selected and the sequence is good. There is, however, no attempt at verification.

The two papers reproduced are representative of the papers of

the class as a whole; they are better than a number of others in that the first paper states hypotheses as such more clearly than some, and the reasoning of the second paper is more explicit than in many of the others.

4. CONCLUSIONS

1. In the lives of children, as in adult life, conscious organization plays an important part in the attainment of certain ends. This is true even for the latter part of the pre-school period.

2. Children organize to attain ends felt to be worth while.

3. Problems which impel organization in out-of-school life are practical in their nature; in school they are probably as closely related to practical life as the subject matter will permit.

4. In the organization of experience children proceed in a manner quite similar to that of adults. For

(a) Children limited in experience and ignorant of method copy closely the procedure of an ignorant, untrained adult. There is but a dim appreciation of the problem, no tentative attitude toward plans of solution. Accomplishing the end seems largely a matter of trial and error, in so far as there is success.

(b) With more experience children begin to recognize more definitely the problematic elements in a situation and suggest plans of solution as such, trying them out and accepting such as meet their situation while rejecting those that do not.

(c) Hypotheses advanced are limited in scope due to the lack of any comprehensive system of knowledge on part of children. A comprehensive problem may break up into a series of minor ones, each of which may be solved independently of the rest.

(d) Hypotheses are commonly stated as reasons in school, especially in the lower grades of the elementary school. This is probably due to the fact that, owing to the teacher's interference, the pupil does not have the same opportunity of trying out his suggestions as in out-of-school life. This may also be due to the fact that children are not confronted with "problems of action"; the means of trying out suggestions are not at hand.

- (e) Facts used in problem solution are likely to be of the concrete, specific type in the lower grades and even in the upper grades; in fact, wherever experiences in a given direction are limited in number. In branches in which the development of concepts has been the definite aim for several years, as in the case of geography for example, children use such concepts readily in the grammar grades.
- (f) The number of facts which children use in the solution of a problem is likely to be limited. Children seem to lack experiences in sufficient number and do not appreciate the importance of an abundance of facts in the solution of a problem.

CHAPTER FOUR

PRESENT PRACTICE IN CURRICULUM-MAKING AS TO ORGANIZATION WITH RECOMMENDATIONS OF STANDARDS

The Importance of Organization as an End in the Teaching Process and Its Implication for the Organization of Instruction Materials.

It is evident from the preceding discussion that organization of knowledge is the important means for the control of both old and new experiences. Organization of the facts within one's experience indicates that the relationships obtaining among them have been clearly recognized and possibly expressed; that in this manner clearness of meaning has been brought about; that the various elements in the unit of organization are seen in proper perspective; that greater simplicity is attained; that the several elements, individually and jointly, have greater force; and that conduct is likely to be more efficient because it has a rational basis. Organization must therefore be an important end in the teaching process. This has been pointed out by Welton when he says that "the aim of teaching is not to impart facts but to develop systems: facts are only of value in so far as they are starting points for such development."¹ And by Creighton when he says that "in order to pass from a lower to a higher intellectual point of view, — to become better educated, in a word, — it is necessary to see the way in which the various pieces of our knowledge are connected and dependent upon one another."² Professor Dewey laments the absence of proper organization of materials from lessons and says that "only when relationships are held in view does learning become more than a miscellaneous scrapbag."³ Not that organization of facts is an end in itself but rather a tool "in the creation and development of new experiences."

Now if organization of knowledge constitutes so important an end in education it is evident that the school must take cognizance

¹ Logical Bases of Education, p. 119.

² Introductory Logic, p. 320.

³ How We Think, p. 97.

of this fact and so arrange its method of procedure that this end can be accomplished. The controlling principles for this purpose were discussed in the preceding chapters. It was there pointed out that children as well as adults organize under stress and guidance of a purpose or problem of vital import to them. The children themselves do the organizing by advancing tentative solutions, or hypotheses, which are tried out in the light of data available for that purpose, and by the arrangement of those relevant so as to indicate whether the proposed solution is the right one or not. Progress in the child's education is synonymous with a continuous reorganization of experience under stress of increasingly comprehensive vital problems. The school must therefore give the child an opportunity to organize, to think through problems which are vital to him, and to select and arrange materials so that the resulting solution, and the organization necessary to the end, will be his own. How shall this be accomplished? Evidently before the pupil can formulate the problem the teacher must very often have formulated it in her own mind and must have thought of the conditions which might make it arise. Before the pupil can choose the facts essential to its solution the teacher must have made them available to him: and before the pupil can arrange them so as to indicate the solution sought, the teacher must have foreseen the conclusion and must guide the pupil to reach this end. This work, which the teacher must do to enable the child to organize successfully, is the teacher's organization of instruction materials with reference to the needs of the pupil.

Organization of instruction materials with this end in view becomes increasingly significant the more we look upon the child's needs as the important factor in the educative process. And yet little attention has been given to it. At present very commonly children are admonished to think, but because no provision has been made for a situation in which thought appears essential and organization imperative to the child no thinking takes place. The organization which results is therefore that of the text-book or teacher and the pupil's method is memorization, or, at best, an attempt to understand sufficiently well for recitation purposes what text-book or teacher mean. The teacher of course is at fault when she follows such a procedure. But more blameworthy is the supervisor who frames the course of study which offers no assistance in the organization of instruction materials for teaching purposes. The teacher confronted with a task which is frequently

beyond her ability necessarily continues as she has previously done until supervisors, through courses of study, come to her assistance.

The problem to be discussed in the present chapter is, How should courses of study be constructed so as to be of the greatest assistance to teachers in their attempts to make instruction materials meaningful, to secure clearness, perspective, organization of knowledge by pupils? Before proceeding with the discussion of that problem, however, it may be profitable to inquire to what extent present courses of study make provision for organization of knowledge by pupils.

The Extent to which Organization of Instruction Materials for Teaching is Regarded as a Problem in Course of Study-Making.

Twelve representative schools and school systems were requested to send to the writer their courses of study and syllabi in subjects in which there were any. In this list there were two state systems, nine city systems, and one school of observation in a teachers' college. That the importance of organized knowledge is recognized as an end in education in some systems is indicated by the fact that they make specific reference to it. Thus, one course states that "too much time is wasted on isolated facts and non-essentials. The knowledge of the children is not organized." And again, "Details in the elementary study of history should be recognized only in so far as they contribute to larger conceptions of noble conduct, courageous deeds, and personal achievement, and give insight into motives and qualities of character that should be universalized, and make clear the principle upon which the everyday life of the world is conducted." . . . "All geographic and historic material is to be more carefully organized, generalized and co-ordinated into relations of cause and effect."⁴ . . . "Only the great movements in our nation's history should be emphasized while the ten thousand isolated facts and unimportant details should be ignored."⁵ Another course commenting upon the failure of pupils to profit from the study of history attributes as the cause the habit of memorizing the text-book, and makes the following suggestion: "This practice is unprofitable because it calls for no one of the three disciplinary processes, — selection of pertinent, and exclusion of non-pertinent facts; reflection upon facts, and organization of facts by the pupil himself."⁶ A third course mentions the

⁴ System No. 4, pp. 46-47.

⁵ *Ibid.*, p. 67.

⁶ System No. 1, History Syllabus, p. 28.

desirability of organization in the following terms: "In the more advanced grades, pupils should be led to the classification of geographical facts. The child begins geography with details, but as his knowledge increases it will be of advantage to lead it to group these details into classes or systems of facts.⁷ A fourth course explaining the purpose of problems in teaching geography states that "It should be kept in mind that the purpose is not to make final judgments or settle great questions, but simply to give purpose and coherence to a series of lessons."⁸ A fifth course actually attempts some organization of topics, as will be shown later. It seems therefore that the importance of organization of facts as an end in teaching is recognized in some school systems at least.

How do present courses of study aid the teacher in attaining organization of facts on part of pupils?

Probably the most effective way to show what is done, as well as what is not done, will be to give some illustrations from the courses examined. All of them have been taken from the geography of Europe; the same country would have been selected in each case, but the several courses take different countries as types, working out their treatment in some detail, and leave others to be worked out by the teacher.

The first illustration is the geography of Great Britain from System No. 4. It is here given in full as is also done in each of the other illustrations.

Geography (using any text) — Teach in detail Great Britain.

The next illustration is taken from System 1.

BRITISH ISLES

1. POSITION.

- (a) Hemisphere.
- (b) Latitude and longitude.
(Extent found, not memorized.)
- (c) Zone.
- (d) Direction from home and other grand divisions.
- (e) Surrounding waters.

Note. — The following topics in position apply only to British Isles.

- (f) Central position in reference to the land masses of world.
- (g) Insular. (Position.)

- (1) Many colonies.

Name and location of most important colonies.

Note. — Correlate as much as possible with child's knowledge of history in regard to exploration and colonization.

⁷ System No. 3, Geography, p. 7.

⁸ System No. 8, Geography, p. 28.

(2) Large navy.

Note.— Show reasons for development of large navy in connection with the acquisition, maintenance, protection of, and trade with, colonies.

(3) Greatest foreign trade.

2. SIZE.

(a) Of British Isles. Compare with some state of United States.

(b) Of England.

(c) Of British Empire (one-fifth of land surface of world).

Note.— Distinguish British Empire, British Isles, Great Britain, and England.

3. SHORE LINE.

(a) Character.

(b) Adaptability.

Note.— Show commercial advantages to England in the fact that many of her excellent harbors are opposite each other.

(c) Groups of islands.

4. RELIEF.

(a) Of Scotland.

(1) Highlands.

(2) Lowlands.

(3) Scenery.

(b) Of England and Wales.

(1) Highlands.

(2) Lowlands.

Note.— Mention the downs and the moors.

(3) Scenery.

Note.— Noted landscape gardens and country districts.

(c) Of Ireland.

(1) Highlands.

(2) Lowlands.

Note.— Study fertile plains and bogs.

(3) Scenery.

Vale of Avoca.

Giant's Causeway.

5. CLIMATE.

(a) Causes inferred from —

(1) Latitude.

(2) Elevation.

(3) Mountains.

(4) Winds.

(5) Rainfall.

(6) Ocean currents or drifts.

(b) Healthfulness.

(c) Peculiarities.

Note.— Call attention to the fact that these climatic conditions result in mild winters, cool summers, and almost constant rainfall.

DRAINAGE.

(a) Rivers.

- (1) Source.
- (2) Course.
- (3) Mouth.
- (4) Navigation.

Note. — Call attention to the small swift flowing rivers and their industrial importance; study large rivers, as Thames, and Mersey, whose wide estuaries extend far inland making ocean commerce possible for cities in the interior.

7. IMPORTANT CITIES.

(a) Of Scotland.

- (1) Edinburgh, Glasgow, Aberdeen.
- (2) Location.
- (3) Important facts.

(b) Of England.

- (1) Name.
London, Liverpool, Manchester, Birmingham, Leeds, Bradford, Sheffield, Hull, Newcastle, Bristol, and Southampton.
- (2) Location.
- (3) Interesting facts.

(c) Of Wales.

- (1) Names.
Cardiff, Merthyr.
- (2) Location.
- (3) Interesting facts.

(d) Of Ireland.

- (1) Name.
Dublin, Belfast, Cork, Queenstown, Armagh, Limerick, Londonderry.
- (2) Location.
- (3) Interesting facts.

8. PRODUCTS AND INDUSTRIES.

(a) Products (of British Isles).

- (1) Agricultural.
- (2) Mineral.
- (3) Animal.
- (4) Miscellaneous.
- (5) Manufactured.
 - (a) Of Scotland.
 - (b) Of England.
 - (c) Of Ireland.

(b) Industries.

- (1) Of Scotland.

Note. — In connection with study of industries, call attention to the hand weaving of the people of the Hebrides. Correlate with the study of textiles in the manual training work.

(2) Of England and Wales.

Note.— In connection with study of industries call attention to the market gardening.

(3) Of Ireland.

Note.— In connection with study of industries note the making of lace by hand, and the manufacture of fine linens.

9. COMMERCIAL IMPORTANCE.

(a) Comparison with the United States.

(b) Trade.

(1) Exports (manufactured articles).

(2) Imports (foodstuffs, raw materials).

(3) Routes.

(c) Reasons for development.

10. PEOPLE.

(a) Race.

(b) Nationality.

English, Irish, Scotch, Welsh.

(c) Characteristics.

(d) Religion.

(e) Government.

For the other five great powers of Europe use similar topics, and for the remaining countries select topics needed.

The following illustration is taken from System No. 8.

THE THREE MODERN INDUSTRIAL GIANTS: ENGLAND, GERMANY AND THE UNITED STATES

Their common watchword: International trade; imperial power; high degree of civilization and culture.

BRITISH EMPIRE

OUTLINE

1. Location and climate of mother country.
2. Physical features and natural advantages.
3. Industries.
4. Cities.
5. Colonies— Canada, India, Australia, South Africa, British Guiana. Location. How controlled by England. Advantages to both mother country and colonies from their mutual relations.
6. Commercial fleet.
7. Rivals.
8. Army and navy.
9. Future problems: Railways, telegraphs, steamship lines. Education of people toward the responsibility of an ever-widening government. Relief of poor and needy by education and better training in useful occupations.

BRITISH EMPIRE

SUGGESTIVE QUESTIONS

1. The location of the British Isles has provided rare opportunity for the development of the nation. If you recognize any restrictions discuss them. What are some of the opportunities, or aids, to this development?
 - (a) Freedom of invasion.
 - (b) Nearness or proximity to important markets.
 - (c) Long hours of daylight.
 - (d) Climate protected from Arctic current.
 - (e) Cheap transportation which the sea affords.
 - (f) Broken coast line; excellent harbors.
2. Give a reason or reasons why England, which was once an agricultural country, has become the greatest manufacturing and commercial nation of the world. (Resources of iron and coal; climate; fine harbors; numerous rivers, and its proximity to the sea.)
3. What is Great Britain's chief ambition? (To remain the greatest commercial nation in the world.)

What does the Englishman mean by saying: "The sun never sets on the English flag"?
4. How does the United States play an important part in the great cotton manufacturing center of Great Britain? How does this center benefit the United States as well as itself?
5. Practically all of Europe lies north of the latitude of Philadelphia, Indianapolis and Denver, and its climate as a whole is much more moderate than that of North America in corresponding latitude. What causes this marked difference? What are the results upon agriculture?
6. Compare the population of Great Britain with that of the United States as to the square mile. Material to feed and clothe this dense population is not raised in sufficient quantities in Great Britain. In what way are the United States of great value to Great Britain in solving this question?
7. During recent years less grain has been raised in Great Britain than formerly and market gardening has increased. Discuss this question, giving reasons for the change.
8. Discuss the difference between the farmer and his relation to the land in Great Britain and that of the farmer in the United States. Why has Ireland suffered from this system?
9. Compare the western coast of Great Britain as a whole with the eastern coast of the United States as a whole, and state what effect the coast of each has upon the commerce of that country.
10. Great Britain is a great colonizer and the comparatively few millions of people in the British Isles rule today over millions of square miles of territory and hundreds of millions of people. Compare this spirit of colonization with that of the United States.
11. Compare inland navigation of Great Britain with that of the United States. Which country has nature assisted more in this direction? In what way is man improving conditions in this respect?
12. Why do we find stock raising in Great Britain where we do? From what

- country does it import beef? Show why dealers in England are greatly interested in the price of cattle which our western states produce?
13. Why is it desirable for England and the United States to be on friendly terms?
 14. Name several possessions of the British Empire that are well located for modern civilization. Those not so well located.
 15. Formerly no country could compare with England in its output of coal and iron. Name *two* formidable rivals that now exist. What does this bring about? (Competition.)
 16. Why does England feel the necessity of having so large a navy? (The extent and remoteness of her possessions.) Of having so large a merchant marine? Next to her colonies, Great Britain's greatest trade is with the United States. How do you account for this?
 17. Does the population, other things being equal, have any influence upon the manufacturing of a city? What other elements enter into this question?
 18. Compare the present condition of Australia with its condition when England took possession. Discuss the people; mode of life; occupations or whatever you feel enters into this comparison.
 19. At times, such as the coronation of George V, representative people from all parts of the British Empire were present. Imagine yourself a visitor at that time and give to your friends a description of the appearance of these different peoples. Show in what way this pageant might impress the British subjects with the extent and power of their government.
 20. What relation do Canada, Australia, India, New Zealand, Tasmania, the Transvaal and Orange River colonies bear to the British Empire?
 - (a) What political power does the British Empire exercise over these colonies? Discuss some of the most important of these, as to the people and mode of life; the climate; products; occupations; imports and exports.
 - (b) What country carries on the greatest amount of trade with these colonies? Give the reason for this.
 - (c) Follow the course of a British merchant vessel sailing from Liverpool to Melbourne or Sydney via the Suez Canal. Tell at what ports it would be likely to stop. What exports would it probably leave? What imports would it probably take?
 - (d) What do you understand the expression, the Commonwealth of Australia, to mean?
 - (e) How do they secure their Governor-General?
 - (f) Discuss the question of coaling stations for the British Empire.
 - (1) Where located?
 - (2) How were they secured?
 - (3) Why of great advantage to the empire?

The last illustration is taken from System 12.

THE NETHERLANDS — A TYPE

Work in home geography affords a growing interest in the Dutch. We locate their country and study them in their home environment.

Before studying the topics outlined below, class interest is obtained by reading selections from "Hans Brinker" and a short description in Carpenter's "Europe,"

dealing with the industries of the country. The solution of the discovered problem gives a definite purpose for considering physical conditions that are in part responsible for the life and industries of the country.

PROBLEM: "Why is grazing an important industry in The Netherlands?"

REVIEW: Locate grazing regions studied in United States and Canada.

Recall conditions favorable for grazing:

1. Surface generally level.
2. Climate not suitable for agriculture.
 - (a) Rainfall.
 - (b) Temperature.

Location: Political map.

Surrounding countries and waters: Latitude with reference to 40th parallel. Comparison with New York.

Size: Extent. Comparison.

Surface: Physical map in Atlas.

1. The Rhine Basin. Application of study of general surface map, noting peculiarities of surface.
2. Dykes: Their purpose, size, care; stories, pictures.
3. Dunes: Nature's aid in helping to shut out the sea. Influence of sand and prevailing westerlies.
4. Reclaimed lands. Fitting for use, draining, canals, pumps, windmills. Use made of winds.

Grazing: Application of surface conditions favorable for grazing to reclaimed and other sections. Comparison with United States. Among Alps.

Temperature: Atlas.

July temperature. Comparison with New York and United States. Application of temperature conditions favorable for grazing.

Rainfall: Atlas.

Influence of prevailing westerlies. Application and comparison with United States.

Summary: Solution of problem.

Because of the generally level land, range of temperature, and distribution of rainfall, grazing may be carried on in The Netherlands.

Dairying: Result of grazing. Comparison with United States. Alps.

Cattle: Kind, number, care, cleanliness, sheds. Comparison with United States. Alps.

Life of the People: Comparison with cowboy life. Life among the Alps.

Butter and Cheese: The making. Centers of dairying. Markets at home and abroad, their location.

Industry of towns depends upon accessibility of raw products, nearness to markets demanding products, ease of transportation.

Transportation: Routes. Ports from which shipped, Rotterdam, Amsterdam.

The illustrations offered are representative of courses of study in general. There are courses which consist of a list of topics, stating, also, in some instances, the pages of the text-book used in the class work. Again there are courses which outline in some detail the list of sub-topics, indicating logical relationships, and pointing out that

organization of facts which ought to be obtained after the subject has been taught. The third illustration represents a class also stating the logical relationships obtaining in the subject matter and adding some suggestions, here in the form of problems, which are to point out to the teacher effective methods of accomplishing the end desired. The last illustration indicates an attempt to point out the way by which the teacher may secure organization of subject matter on part of the children. It is the only course of the twelve used as a basis for this study which goes so far as to suggest a problem which pupils appreciate, suggest data to be used in its solution, and state the conclusion which children are to draw. It is not the purpose of the writer to attempt an adequate criticism of any one of these plans at this stage of the discussion. It should be said, however, that the first course offers absolutely no aid to the teacher; that the second and third are useful chiefly because they point out more or less fully — especially in case of the second illustration — the final product of study or reflection, but not the way to attain it; that the fourth offers some sound suggestions but fails to carry the psychology upon which it is based to its logical conclusion. A more extended discussion of this point will be attempted below.

The striking fact is that the majority of courses of study seem to ignore the problem of organization of materials for the purpose of instruction. It is scarcely possible that its importance is not recognized in such systems; it is more likely that it is felt to be purely a problem of method rightfully belonging to the class teacher. This would seem to be indicated by an assignment of work taken from a curriculum not included in the twelve made the basis of this study, which reads as follows: "Natural Elementary Geography, pp. 87-109. Europe. Select wisely." In this same system, we are told, the teacher "must know all there is to be known of the country she is teaching. She must be able to separate the important from the unimportant. She must not only tell, but she must teach. Knowledge, careful discrimination, interesting presentation are very important in this work." The directions which are given to the teachers of this grade and topic are given to the teachers of the preceding and following grades as well. The introductory statement to this course in geography is quite devoid of any specific aims or standards of selection and one wonders how even the most capable teachers can "select wisely" under those conditions.

The problem of organizing a curriculum, that is, the selection

and arrangement of instruction materials in such a manner as to secure their proper functioning in the development of the child, is not the problem of the class teacher alone. To construct a curriculum requires a broader knowledge of subject matter and its adaptability to the several grades than the class teacher in any grade ordinarily has. It requires also a clear conception of social and industrial conditions for which the child is to be fitted. There is needed further a comprehensive knowledge of the psychology of childhood for each of the several periods of development, and of the method based upon this psychology. And, finally, there is needed a much broader knowledge of life as it is at present, of the affairs people are thinking and talking about, of what they are doing, etc., than the teacher usually has. Neither class teacher nor superintendent alone therefore possesses the necessary qualifications to construct the curriculum; the coöperation of both is necessary to produce the best result.

3. How should Instruction Materials be Organized in Courses of Study so as to be of Greatest Assistance to the Teacher in her Attempt to Secure Organization of Subject Matter by the Pupil?

a. Problems of a Vital Nature must be Provided.

1. An attempt will now be made to show how courses of study should be constructed so as to be of greatest aid to teachers in their attempt to make instruction materials meaningful, to bring about organization of facts by pupils. First of all, curricula must provide the problems of vital significance to the pupil required as the essential condition of all thinking. Whether or not the problem to be discussed by teachers and pupils shall be a problem of action, or one having for its purpose the explanation of a specific instance, or one having as its end the development of a general principle, or that which attempts the explanation of a situation assuming the previous development of the explaining principle, must be decided by those in charge of the making of the course of study.

To provide problems of the right sort two factors must be considered at every stage of the child's progress in school. (1) What are the needs, both native and acquired, of children, which are most available for the educative process? (2) What are their experiences which lend themselves most readily to suggest to the pupil the relation between a certain need and the effort necessary for its satisfaction? What, in other words, are the experiences of the

child which can be utilized to make certain tasks or problems appear worth while? The native needs of children during the several stages of development were briefly stated in Chapter I; these, although varying somewhat as to strength and time of appearance, are generally available. The acquired needs, on the other hand, differ in different individuals and groups of individuals. While grafted upon the primitive or native needs they are determined by the environment of the child, the economic, the social, and religious status of the parent, and the consequent opportunities, or lack of opportunities, for experience in certain directions; his physical environment, etc. In the construction of a course of study the makers must make a survey of the needs of the children of the community concerned and make them the basis for the suggestion of problems.

What are the experiences of the children which lend themselves most readily to furnish a setting for the problem and to suggest the value of its solution to the pupil? First may be mentioned the school experiences of the children. There is always a considerable number of facts in the possession of the children who have been in school for some time which may be used in this manner. Thus, after the completion of the study of the geography of the United States and other countries of the Americas it will have been noted that we export cotton, wheat, meat, dairy products, and mineral oil to Great Britain; that we import from that country cotton goods, wool and woolen goods, tin, manufactured fibres. The products interchanged between Great Britain and other American countries may also be noted. Attention may then be called to the kinds of materials which the United States and other American countries send to Great Britain and the kinds which that country sends to America. It will be noted that we send raw materials for manufacturing purposes and foodstuffs largely; that Great Britain does not send us foodstuffs but manufactured products. These facts suggest two problems for discussion: Why does Great Britain import so many foodstuffs? and Why does Great Britain engage in manufacturing so extensively? Other problems, the significance of which may be shown by appealing to school experiences are: Why is fresh air so necessary to our health? Why is exercise in the open air so valuable? Why is oxygen so important to the blood? To the digestion? How does oxygen keep us warm? How can we keep the air in our rooms fresh?⁹ Why did the Articles of Con-

⁹ Taken from course of System 12.

federation prove unsatisfactory to the country? How did the country secure a new constitution? How will the Federalists succeed in their attempt to give the country a stronger government?

In a similar manner the community experiences of the children may be used; what the people of his immediate environment are interested in, what they talk about, what they do, very often suggests to the child the value of experience in certain directions. Why is Colorado considered a good location for people suffering from tuberculosis of the lungs? Why do some of our western states, in spite of their deficient rainfall, succeed in raising much fruit and other agricultural products? What kind of men should be elected aldermen? Why should the business streets of our village be oiled during the summer months? Why should the nominee of the democratic rather than the nominee of the republican party have our support in the coming election? Such problems as these are frequently discussed by adults, and children not only are but should be interested in them.

A further source of good problems is the larger environment of the pupils, the life of the nation, even of the world, with which he comes in contact through the daily press, through magazine literature, through lectures and sermons, etc. Should the United States continue to uphold the Monroe Doctrine, or has the latter outlived its usefulness? Should all the nations of the world be permitted to use the Panama Canal on equal terms? Why should the United States make a special effort to be on good terms with the nations of South America? These are illustrations of the manner in which this type of experience may be used in suggesting problems. Because of the nature of the source of these problems it is evident that they will not constitute a prominent place in the curriculum before the grammar grades, that is, before the pupils come in contact with these sources.

Will problems permit the introduction into the curriculum of those facts generally looked upon as essential in subjects in which thinking and the organization of experience into concepts play an important part? If it is granted that the one reason for the introduction of facts into such subjects is their use in the development of concepts the answer is simple: one reason for the introduction of problems is that we may have an effective means of controlling the selection and arrangement of such facts as are of value in developing the concept. On this basis all the essential facts will be included and no other facts should find a place in the curriculum.

Thus the geography of Great Britain is presented in System 1 under the following heads: Position, Size, Shore Line, Relief, Climate, Drainage, Important Cities, Products and Industries, Commercial Importance, and People. These are the topics which, with slight modifications, are usually suggested in courses of study and text-books in general. In Chapter V these facts are discussed in connection with the problem "Why does Great Britain buy wheat, meat, other foodstuffs and cotton of America and pay for them with manufactured goods?" The topics usually treated in connection with the financial legislation of Congress during the first two administrations are

- (1) Tariff.
- (2) Hamilton's Report on Public Debt and Public Credit.
 - (a) Funding the debt.
 - (b) Assumption of state debts.
- (3) Excise Tax.
- (4) National Bank.
- (5) Protection to Home Industries.
- (6) Whiskey Rebellion.

In Chapter V these topics are discussed in connection with the problem, "How will the Federalists succeed in establishing the credit of the new government at home and in European countries?" From these illustrations it will be evident that certainly most of the topics usually treated will still continue to find a place in the curriculum, but that their reason for retention will be their value in the solution of problems. That some facts which to the adult writer or student appear to be necessary for the sake of complete logical system will be omitted will not be a misfortune; children will be able to arrive at the complete logical system only by traveling the road here indicated.

Shall one or more than one problem be used in the treatment of a topic like the geography of Great Britain? While all the essential facts bearing upon a topic may often be discussed in connection with one problem, very distinct advantages will arise if they are treated in relation to several. Thus, in the first place, since the several problems are likely to require the use of data in many instances identical this procedure will afford an excellent means for review and drill. Writers on educational theory insist that an effective "review" is a "view from a new position,"¹⁰ "a re-seeing from a different standpoint."¹¹ This the introduction of several

¹⁰ McMurry, *Method of the Recitation*, p. 177.

¹¹ Bolton, *Principles of Education*, p. 555.

problems makes possible. In the second place, a better organization of facts will result in this manner, the same facts will be seen in new relations and thus become more significant.¹² How very important to a real understanding of a topic-complete organization of ideas — it is to see it in numerous relations is very clearly shown by McMurry.¹³ In presenting the geography of Great Britain, therefore, while it is possible to teach all the facts usually found in the text-books, in relation to the problem "Why does Great Britain buy wheat, meat, other foodstuffs, and cotton of America and pay for them with manufactured products?" other problems should be considered as, e.g., Why do Americans like to travel in the United Kingdom? Why does the United Kingdom maintain so large a navy? How does the British government encourage manufacturing? In Chapter V these problems are worked out in some detail.

To what extent may problems be introduced into the elementary school curriculum? May we resort to them in every branch of study? "The problem is well-nigh universal in every field of human endeavor, educational and vocational, for whenever the adjustment of thought to fact or of fact to thought is involved, there the problem lies close at hand. That it is of supreme educational importance in the sciences cannot be doubted; it is equally serviceable in the humanities whenever the student should be incited to think. History easily resolves itself into a series of problems respecting cause and effect. Every literary masterpiece fairly bristles with problems psychological, social, ethical, and linguistic. Even the purely aesthetic, whose appreciation is usually considered to rest upon contemplation alone, is greatly aided by intellectual comprehension, which always permits the problem form."¹⁴ There are problems in sufficient number to be found in every branch of study; therefore; the task remaining for school authorities is to select and formulate desirable ones and so render them available to teacher and children.

Of the curricula investigated two suggest problems in geography,¹⁵ two in physiology,¹⁶ one in elementary science or nature study.¹⁷ In no case are problems suggested in history, arithmetic, drawing and music. One reason for this situation may be the fact

¹² Bolton, *op. cit.*, 555.

¹³ *Op. cit.*, p. 178.

¹⁴ DeGarmo, *Principles of Secondary Education, Processes of Instruction*, pp. 23-24.

¹⁵ Systems V and XII.

¹⁶ Systems VIII and IX.

¹⁷ System XII.

that vital problems of a practical nature suggest themselves more readily in the three branches first named than in some of the rest. It should not be supposed, however, that because problems of an immediately practical nature cannot be found, no problems of vital interest to children should be looked for. In fact, to the fifth grade child struggling with division of decimals, the problem "How must I proceed in division of decimals in order to make sure of the proper placing of the decimal point in the quotient?" may be of extreme significance. The problem "What colors must I mix, and in what proportion, to secure a dark brown?" may be vital indeed; and the problem "How can I tell the key in which a musical selection is written?" may be thoroughly appreciated by children. Problems are not equally numerous in all branches of instruction. In arithmetic, spelling, music, and drawing we are largely concerned with habit formation, learning facts in specific relation only; thinking or reasoning, therefore, plays but a minor part in certain lessons, and problems will not be resorted to. However, where the task is the acquisition of new experiences and their organization, making them significant, the problem must be introduced; for it is the function of the problem to induce thinking, to direct thought in certain channels, to lead to organization of experience, to the development of concepts and their application.

b. The "Setting" of the Problems should be Indicated.

2. Second, courses of study should indicate the experiences which are to be used as a basis, or setting, for the problems to be considered. The experience of the pupil, as has previously been suggested, must not be interpreted to mean only that which he has gained through the pursuit of any one study. This undoubtedly, as he progresses through the grades, will come to constitute a considerable portion of all the experience available for the origination of problems. But there is always the knowledge which he has acquired in other branches of study closely related to the one in question, and very frequently, most important of all, the many experiences which he has acquired both in school and out which the course of study does not provide for. This latter class of experience has been gotten in a more or less incidental manner and is likely to have the shortcomings of all chance information. Often it will be ill defined, and frequently it will be lacking a rational basis. But it is often closely related to the child's life of action, has a more or less intimate relation to some native or acquired interest

of his, and has for this reason made a more vivid impression upon him than much of his school experience. It will, as a result, be more responsive when problems are proposed which appear to have some relation to it. For this reason this material should be used whenever the nature of the problem makes it possible. In accordance then, with the nature of the problem which is to be raised for discussion, the curriculum should indicate: (1) A review of certain school experiences; these may be taken from the branch immediately concerned, or from related branches. (2) A review of possible community experiences having a bearing upon the problem. (3) A review of experiences obtained from the daily press, magazine literature, etc., relating to the larger environment of the child. In certain cases also, when sufficient experiences are not yet within the possession of the child, provision must be made for them by the curriculum. An illustration of this demand upon curricula is given below; it is taken from System XII, course in geography:

Before studying the topics outlined below, class interest is obtained by reading selections from "Hans Brinker" and a short description in Carpenter's "Europe," dealing with the industries of the country. The solution of the discovered problem gives a definite purpose for considering physical conditions that are in part responsible for the life and industries of the country.

Of the curricula investigated problems were suggested by System XII in some of the branches. Thus in geography we note the following among others: How streets, tunnels, and bridges knit together the scattered parts of our city; how traffic is accommodated and expedited; how our streets are made safe and attractive for city dwellers;¹⁸ how the activities of the colonizing nations of Europe are influencing the primitive peoples with whom they come in contact.¹⁹ How do our local dealers get their supplies? What is a wholesale market and where is it located? Why can certain foods be raised at home and not others?²⁰ Why is the United Kingdom the greatest exporter of manufactured goods? Why is Russia called "The Land of Silence"? Why should New York have so large a foreign population?²¹ Other problems are found on pages 28, 32, 35, 39-41 of the course in geography.

In nature study the following are some of the problems suggested: How do plants get ready for winter? Why does the rabbit make a good pet? How does he take care of himself? What can we do to make him happy?²² How are spring flowers able to get into bloom so quickly?²³ How does New York get its water supply?

¹⁸ p. 15.¹⁹ p. 16.²⁰ p. 21.²¹ p. 26.²² p. 34.²³ p. 35.

How can an airman tell how high in the air he is? How are divers able to go below the surface of the water?²⁴ The materials suggested for study in Grade 6 are largely stated in problem form while in other grades little or no attempt seems to have been made to do so. In these two branches only are problems suggested in this system. In System VIII problems are suggested in geography and in physiology and hygiene. Again no consistent attempt seems to have been made to use the problem as a means of securing organization of materials in the several branches of the curriculum. System IX introduces the problem in the course in physiology and hygiene for grades four and five.²⁵ While the headings of some of the topics to be taught are occasionally stated in such a form as to suggest problems in the course of history of System I they are not actually formulated, the task having been left to the teacher. In general, therefore, the task of formulating vital problems around which instruction materials might be organized has been omitted in the courses of study of the twelve systems used in this study. As a direct result of this fact — the neglect of formulating problems — authors of courses of study have not deemed it necessary to suggest experiences which might be used as a basis or setting for such problems. The only exception to this statement is found in System XII, "Netherlands."

c. Data for the Solution of Problems should be Suggested.

Failing to supply vital problems and thereby depriving teachers of standards for the selection of instruction materials, one should imagine that courses of study would indicate in some detail the facts to be taught. But here again no adequate provision has been made to meet the needs of the teacher.

In the illustrations given above (pp. 3-11) the first merely mentions the names of the countries to be taught without indicating in any way what facts are to be presented under each. Even the references offer no help, for the teacher is given the opportunity to "use any text." The task of selecting the materials to be taught is here left entirely to the teacher, who, in the absence of any standards for selection supplied her by the curriculum, may follow either her own inclination or custom in the matter. It is difficult to see how under these conditions the teaching of Great Britain can be anything except the memorization of those facts which the

²⁴ p. 43.

²⁵ In edition of 1908-9 but omitted in edition of 1913-14.

author of the text chosen by the teacher has deemed it wise to include. When one considers that different authors stress somewhat different points or lines of thought and discuss topics with great variation of details, one wonders how there can be any continuity in the course in geography of this system, and how a high standard of work can be maintained. System VIII has gone a step beyond System IV in this matter, for there we find besides the name of the country a list of minor topics such as "Location and climate of mother country"; "Physical features and natural advantages," etc., and while in this particular illustration no details are suggested, this is often done with other countries. Thus in the outline on France under "Climate" the teacher is directed to teach (a) the effect of the prevailing westerlies; (b) the effect of the mountain barrier on the east; (c) to compare the latitude of Paris and Duluth; of Havre and Chicago. Under "Manufacturing" the teacher is to note that France is fourth in the world and first in textiles; that large values in small bulk are the rule, owing to artistic workmanship. Textiles, wine, porcelain, automobiles, mirrors, art goods, jewelry, millinery, dresses, gloves, are the products. Further indications of the facts to be taught are found in the suggestive questions of the syllabus; these, however, merely suggest a certain line of thought without indicating definitely the materials to be used. The teacher is here again left to her own resources in procuring most of the materials to be used in the teaching of any topic. In the syllabus of System I the general topic "British Isles" is given a more complete analysis than in the preceding two illustrations. The usual sub-topics appear but with additional sub-divisions. While this outline on the whole is possibly more suggestive than either of the preceding it leaves to the teacher the selection of the "important or interesting" facts which the children are to learn. Whether these shall be literary, or historic, or geographic in character, and if the latter, whether the physiographic features or the economic shall be stressed, is not indicated. The course of study of System XII offers little more assistance in the selection of data than that of System I, leaving the task largely to the teacher. In the illustration cited, however, the teacher has the advantage of a problem which will direct her efforts in certain definite channels. In general, throughout the twelve systems studied, topical outlines prevail.

It may be objected that the criticism here made of curricula is unfair, that the facts usually taught in connection with certain

topics are well agreed upon by text-books, and are therefore easily supplied by the teacher. But this is by no means the case. While there may be a fair agreement among authors on the larger topics to be included in the treatment of a given subject there is considerable diversity of procedure when it comes to the kind and number of minor topics and the kind and quantity of details used in their development. The following illustrations will make this evident. The first two, taken from two popular text-books in geography, represent the discussion of "Germany" which each author gives. The first is stated *in toto*; the second presents merely the marginal headings used in the text.

GERMANY. Germany has rich coal and iron mines, beds of porcelain clay, and sand for making glass. The river valleys of this country are famous for their wine grapes. Large areas are planted with sugar beets and with cereals.

This country imports cotton from the United States, wool and flax from Russia and Hungary and raw silks from Italy.

The principal manufactures of Germany are cloth, iron articles, beet sugar, glass and porcelain. Large quantities of these articles are sent to the United States. Besides cotton our country sends grain, meat, petroleum, and tobacco to Germany, — largely through the port of Hamburg.

Germany ranks second among commercial countries.

BERLIN, the capital, is the third city in size in Europe, and thus ranks next to London and Paris. Berlin is a great trade center and the seat of a famous university.

LEIPZIG has a large university and is noted for book publishing. MUNICH and DRESDEN have great galleries of painting and sculpture.

HAMBURG, on the tide water of the Elbe, is the leading port on the mainland of Europe. ESSEN is famous for the manufacture of large weapons of war.

The German Empire consists of many smaller divisions having their own local rulers, but all are combined into one empire. The king of Prussia is also emperor of the whole German nation. Some of the other divisions of the empire are ruled by princes, by dukes or by other titled officials. Germany has large possessions in Africa. Part of the island of New Guinea and various smaller islands in the Pacific ocean belong to that country.

Germany is famous for its institutions of learning and for the splendid discipline of its army.

GERMAN EMPIRE

Position and its advantages.

Formation of the empire; present area and population.

Government.

Why the boundary is so irregular.

Preparation for defense of the country.

Surface features.

1. The highlands.
2. The lowlands.
3. Drainage.

Climate.

1. Temperature.
2. Rainfall.

Lumbering.

1. Location and extent of the forests.
2. Care of the forests.

Agriculture.

1. Its importance.
2. Farm crops.
3. Live stock.

Mining.

Manufacturing.

1. Its importance.
2. Leading centers of manufacturing.
3. Leading kinds of manufacturing.
 - (1) Textile and iron goods.
 - (2) Lumber and lumber products.
 - (3) Beverages.
 - (4) Beet sugar.

Germany's rapid advance.

1. Nature of the advance.
2. Reasons for it.
 - (1) The Government.
 - (2) Education.
 - (3) Improvement in transportation.
 - (4) Establishment of colonies, and interests of German immigrants.

Principal cities.

1. Their rapid growth.
2. Berlin.
 - (1) Its location.
 - (2) Its importance.
3. Interior cities near Berlin.
 - (1) Leipzig.
 - (2) Dresden.
 - (3) Chemnitz, Halle, and Magdeburg.
 - (4) Breslau.
4. Munich and Nuremberg.
 5. Seaports.
6. Cities along the Rhine River.
 - (1) Cologne and vicinity.
 - (2) Frankfort.

The Rhine River compared with the Hudson.

1. In scenery.
2. In distribution of population along its course.

While the first text devotes one-half page to the discussion, the latter gives ten and a half. Evidently teachers depending largely upon the content of the text will receive very different guidance in the two cases.

The last two illustrations are taken from two text-books in history both written in 1905. The authors had equal opportunity of knowing the advance movements in history teaching and might consequently be expected to include the newer topics advocated by students of this field. Chapters on colonial life are taken for comparison. The outline which follows is taken from one of the texts and names the sub-topics which are treated in the course of the eighty pages devoted to the discussion. The topics discussed in the second text are starred, and those not included in the first outline are added below. While the first text devoted eighty pages to the subject, the second gives only twelve. Again teachers depending upon the text will receive very different guidance in the two cases.

INSTITUTIONAL LIFE IN THE COLONIES

INTRODUCTORY

I. THE FIVE INSTITUTIONS.

1. Their Nature and Scope.
2. Relation of the Individual to the Five Institutions.
3. Importance of Their Study.

II. TOPOGRAPHY. CLIMATE AND SOIL.

1. Their General Effect on Institutional Life.
2. Their Condition in the New England and Southern Colonies.
3. Their Condition in the Middle Colonies.
4. Their Relation to Slavery and the Results.

INDUSTRIAL CONDITIONS

I. COMMERCIAL INDUSTRIES.

1. The Southern Colonies.

(a) Products.

- * (1) Tobacco.
- * (2) Rice, Indigo, and Cotton.
- (3) Other Products.

(b) Plantations.

- (1) Relation to Growth of Cities and Manufactures.
- (2) Relation to Growth of Slavery.

Topic from second text: When the Great Ship came to the Planter's Door.

2. NEW ENGLAND.

(a) Occupations.

- * (1) Farming: Relation to Topography, Climate and Soil.
- * (2) Manufactures — very briefly.
- * (3) The Fish Industry: Trade and Commerce.

(b) Relation of Physical Conditions to Slavery.

3. The Middle Colonies.

(a) Occupations.

* (1) Agriculture: Relation to Topography, Climate, and Soil.

* (2) Manufactures: Opposition of England.

* (3) Trade and Commerce.

(b) Relation of Industrial Conditions to the Growth of Slavery.

Topics from second text: Smuggling and Piracy, Means of Travel.

4. Conclusions as to Influence of Topography, Climate and Soil.

II. PROFESSIONAL LIFE.

1. The Ministry.

(a) The Ministry of New England.

(b) The Ministry of the Middle Colonies.

(c) The Ministry of the South.

2. Medicine.

3. Law.

SOCIAL CONDITIONS

I. THE SOUTHERN COLONIES.

* 1. Population: Classes of Society.

(a) The Negro Slave.

(b) Indented White Servants.

(c) The Middle and Upper Classes.

2. Life on the Plantations.

* 3. Fashion among the Upper Classes.

* 4. Amusements.

Topic from second text: Governor's Reception at Williamsburg.

II. THE MIDDLE COLONIES.

* 1. Classes of Society.

(a) Slaves.

(b) Indented Servants.

(c) The Middle and Upper Classes.

* 2. The Manors of the Hudson and the Mohawk.

3. Dress, Amusements, and Social Life.

(a) In the Country and Small Towns.

(b) In New York and Philadelphia.

Topics from second text: Colonial Houses, Furniture and Light, Training

Day and Rifle Practice.

GOVERNMENT

I. LOCAL GOVERNMENT.

1. Introductory.

(a) Divisions of Government.

(b) Harmony of Laws: Changes and Improvements.

2. The County, Township, and Parish.

(a) The County at the Present Time: its Powers and Duties.

(b) Importance of the County in the Colonies: Growth of its Powers.

(1) The County in New England: The Township.

(2) The County in South Carolina, the Parish and District.

- (3) The County of Virginia.
 - (4) The County in the Middle Colonies.
- 3. Colonial Influence on Local Government.
 - (a) Result in Different Sections.
 - (b) Growth of the Principle of Township Government.
- II. STATE AND COLONIAL GOVERNMENT.
 - 1. State Government.
 - (a) Relation to National and Local Government.
 - (b) Departments of Government.
 - (1) Legislative Department.
 - (2) Executive Department.
 - (3) Judicial Department.
 - (c) In What Respects State, National, and Local Government Differ.
 - 2. Colonial Government: Mode of Treatment.
 - (a) Departments.
 - (1) Legislative Department.
 - (2) Executive Department: Classes of Colonial Government.
 - (3) Judicial Department.
 - (b) The National Authority.
 - (c) Relation to Present State Government.

RELIGION

- I. RELIGIOUS LIBERTY AT THE PRESENT TIME.
- II. RELIGIOUS PERSECUTION IN EUROPE.
- III. RELIGIOUS PERSECUTION IN THE COLONIES.
- IV. CAUSES OF RELIGIOUS PERSECUTION.
- V. GROWTH OF RELIGIOUS LIBERTY IN THE UNITED STATES.
 - Topics from second text: Colonial Church Ways, Severe Punishments.
 - Witchcraft.

EDUCATION

- I. COMPARISON OF COLONIAL SCHOOLS WITH THOSE OF THE PRESENT TIME.
- II. CONDITIONS OF SCHOOLS IN ENGLAND.
- III. THE SOUTHERN COLONIES.
 - *1. Work of the Ministers.
 - 2. Effect of Plantation Life: Opposition of Royal Governors.
 - 3. Schools: College of William and Mary.
- IV. NEW ENGLAND.
 - 1. Influence of the Puritan Church and its Ministers.
 - 2. First Law establishing Public Schools: Influence of Church on Legislation.
 - 3. Elementary Education in New England.
 - *4. Colleges.
- V. THE MIDDLE COLONIES.
 - *1. New York and New Jersey.
 - *2. Pennsylvania and Delaware: Influence of Franklin on Education.
 - *3. Colleges.
 - Topics from second text: Libraries, Newspapers.

Evidently the mere statement of the topic in curricula is therefore not sufficient to insure the teaching of specific facts whether such facts are looked upon as having an intrinsic value, or are intended to be used for the development of a generalization, or are the general facts, or concepts themselves. To state merely the topics, as was seen above, leaves the teacher very much at sea as to the content to be taught; certainly when the problems essential in the selection of materials are lacking, courses of study should indicate in some detail, just what facts, individual and general, are to be included.

However, even when the curriculum indicates a series of problems this will be found essential. For vital problems will often deal with current issues, or at least comparatively recent issues, for the treatment of which teachers will be required to go outside of the text. Text-books are not generally written with such problems as a basis and must necessarily fail to supply some of the data required for the purpose. It therefore becomes the teacher's task to look elsewhere. Thus it will become necessary to consult general and special reference works, special treatises, magazine literature, the daily press; in fact, in some cases — home geography, for example, the facts desired are not to be found in printed form and must be obtained by personal interviews and correspondence. Unless courses of study perform this task for the teachers it is likely to remain undone, for teachers generally have neither the time, the ability, nor the inclination to do it.

Even when all the information needed is found in the text-book, the latter cannot be followed page by page. The author of a text-book very often is interested chiefly in the systematic development of the subject under consideration and arranges his facts accordingly, while the solution of a problem is very likely to require data from the various parts of the subject. Often as in geography and history, the appendix supplies some of the most essential facts. Here again the course of study may be of real service to the teacher by at least stating the references to facts necessary for the given problem. Children's experiences should be utilized to as great extent as possible in the solution of problems. As far as these experiences are indicated by the course of study at least, makers of the latter should have a better knowledge of them than the class teacher whose perspective is very often limited to the work of one grade. The curriculum should therefore indicate in connection with each problem just what old experiences are available for its solution.

To be of real service to the teacher in directing the pupil's search for facts relevant to the solution of problems courses of study should indicate fully the facts most available for that purpose, whether such facts are already known to the children, or are to be found in textbooks or reference books, or are to be obtained from other sources.

Form in which Relevant Facts Should Appear in the Course of Study

Several plans are feasible: (1) The facts may be actually stated in considerable detail, as is now the custom in some systems when the newer branches are under consideration, or when the newer topics of old branches are outlined.²⁷ In some cases, for example in home geography and local history, where printed matter is not available, it would probably be the most economical procedure for the curriculum to state in some detail the facts to be used by the teacher in connection with each problem. It will probably prove more practicable, however, in many cases merely to state the references to the proper sources, as this will materially reduce the bulk of the curriculum. In the latter case, provision should be made by the school authorities to have these reference books available to the teachers.

Such Facts Must be Suited to Capacities of Children

Whatever facts are provided by the curriculum should be suited to the capacities of the children for whom they are intended. As has been previously suggested, old experiences should be utilized whenever possible. Organization of knowledge can result only to the extent to which previous experience is applied; "specific instances frequently are of value in the development of generalizations, while the concepts already established acquire wider meaning through application — through the association of other specific instances with the concept. Objective and graphic illustrations should be indicated whenever necessary to supply sufficiently concrete data; excursions and experiments should be planned for the same reason.

²⁷ Thus System VII devotes eight and one-half pages to the syllabus in Language and Grammar for the elementary school but gives over fifty to eighth grade cookery. System X allows about three pages to the physiology of the bones and muscles, organs of excretion, organs of feeling and willing, alcoholic drinks and narcotics, contagious diseases, and what to do in emergencies, but devotes about ten pages to questions of hygiene.

Facts Must be Supplied in Sufficient Number

Not only should courses of study indicate the facts to be used in solving problems of the right sort and make sure of their suitability to the children, but they must also supply such facts in sufficient number to enable children to arrive at a conclusion which, because of the number and quality of facts adduced in its support, seems thoroughly sound. Thus the comprehensiveness of the problem must be carefully evaluated. It must be asked, "What aspects has this problem which should be discussed in order to arrive at a sound conclusion?" Likewise, "What aspects can children comprehend?" Again the importance of the problem from society's point of view must be taken into consideration and data massed in order to make the conclusion as striking as possible. Finally, the attitude of the children themselves toward a certain problem and its suggested conclusion should be taken into consideration. Truths from history displeasing because of sectional bias; truths taught in literature objected to on narrowly sectarian grounds or other prejudice, must be based upon such a wealth of facts that the conclusion will seem inevitable.

Conclusions Should be Stated

Courses of study should further indicate the relationships which will be the outcome of intelligent problem solution. As has been shown in the previous chapter, problems are introduced for the sake of inducing thinking upon certain materials in order that effective organization of experiences, or facts, may result. The conclusion in each case should exhibit in as clear a form as possible the relations developed. Depending upon the nature of the problem it will at times be stated in the form of a summary; again, it will be stated in a single sentence expressing a causal connection, a definition, or other generalizations. In this manner teachers will be made more conscious of the outcome of their teaching; they will be informed as to just what particular relation is to be established, what concept developed. As a result the conclusion is the more likely to be stressed in their teaching and so rendered available in the further thinking of the pupils.

To What Extent Do Courses of Study Meet These Standards?

It is of course impossible to judge courses of study in general by the standards here set forth. In most cases, as has been previ-

ously stated, no problems are given and consequently standards for judging the relevancy of facts are lacking. For the same reason it is impossible to determine whether facts are supplied in sufficient number; neither could conclusions be indicated where none are expected. In one instance, however,²⁸ both the problem and facts are given. The data supplied are indicated by topic only, which may be sufficient for the teaching force of this system; in school systems in general more detailed statements or references should be resorted to. Some of the data supplied, however, have no direct relation to the problem; these are added to the outline after the conclusion has been stated with the preceding facts as a basis. It would have been better if these facts could have been introduced in connection with a new problem. "Why the Dutch excel in the making of butter and cheese"; "Why the Dutch manufacture such large quantities of butter and cheese, having such a limited area for pasture," etc., are problems which could have been used for the purpose of introducing such topics as kind, number, care of cattle; methods of feeding and utilizing lands for this purpose; quality of butter and cheese manufactured; desirability of the product at home and abroad; markets, both home and foreign, to which products are shipped; transportation routes making shipments easy and rapid.

4. How Courses of Study Should Arrange Instruction Materials

With the suggestion of appropriate problems and the data necessary for their solution, curricula have performed two tasks of importance for the organization of the pupil's knowledge. A third task remains. It was pointed out in Chapter I that the arrangement of facts plays a most important part in securing clearness, perspective, and force, in fact, that the arrangement of appropriate data is what gives them meaning in any given instance. What can curricula contribute to aid the teacher in presenting the facts chosen in an order conducive to the ends desired? Here it would seem that curricula might offer an arrangement of the materials of instruction corresponding to the thought movement during the lesson, in so far as that is possible. It is not claimed here that such an arrangement can be made to meet the needs of the pupils in full; a final adjustment of this kind must always be made by the teacher in the presence of the class. Much can be done, however, to make this final adjustment by the teacher as simple and efficient as

²⁸ Netherlands, System 12, cited pp. 60-61.

possible. It would seem to be wholly practicable for the curriculum to arrange the materials bearing upon a single problem in the following sequence:

1. Those experiences might be indicated which will be essential to suggest the problem;
2. The problem might then be indicated;
3. The several sub-divisions, or sub-problems might then follow;
4. In connection with each sub-problem there might appear the facts or materials necessary to its solution;
5. The conclusion to be derived should be stated, together with the facts upon which it is based in clear and concise form, so as to exhibit the relations to be developed in as forceful a manner as possible.

Extent to which Courses of Study Arrange the Materials of Instruction in Accordance with the Order Here Suggested.

In general, as may be seen in the illustrations cited on pages 3-11, no attempt at arranging materials with due consideration of the needs of the teacher in mind has been made. As previously pointed out, problems which would control such an arrangement are generally lacking; this does away with the necessity for stating the experiences which are to furnish the setting for the problems. Sub-problems are likewise ignored and no arrangement of materials with reference to problems or sub-problems could therefore be attempted. Conclusions are generally lacking. In the illustration from System XII, however, we find essentially the arrangement here suggested. There is first the material which is to furnish the setting for the problem followed by the statement of the problem. Sub-problems are lacking and therefore the arrangement of materials with reference to them. The conclusion is stated after the data necessary for its derivation have been given. The introduction, after the statement of the conclusion, of facts not related to the problem has been previously criticized.

The Relation of such Organization of Instruction Materials in the Course of Study to Organization of Facts by Pupils.

It is quite generally recognized that the best courses of study are those which indicate not only the aims to be reached and the materials to be used in the realization of such aims, but which, in addition, point out the methods by means of which this may be

accomplished. In this manner many helpful suggestions are brought to the attention of teachers. The popularity of such courses of study is fully attested to by the eagerness with which they are used for reference by teachers outside of the system for which they were constructed. Thus certain courses of study have an almost national influence and are quite as freely consulted by teachers without the system as by those within. Suggestions on method are welcomed by teachers generally.

Now, as was shown above, the organization of facts by the pupil is one of the most important ends to be attained by the teacher; it is also one of the most difficult. Here then the teacher stands in need of help which the course of study must render. It is for this reason that the course of study must be organized upon the basis suggested, must include a list of vital problems, of settings for these problems, of materials to be used in their solution, of conclusions to be drawn. Even if the teacher occasionally is able to think of more suitable problems than those suggested by the course of study, such assistance will not be rendered unnecessary. Two results of great importance should be brought about in this manner. In the first place teachers will be given most valuable aid in their attempt to organize instruction materials upon a psychological basis in specific units of instruction. Much of the most difficult work of planning lessons with a view of leading to organization of knowledge by the pupils has therefore been done for them. In the second place teachers will acquire a method of dealing with instruction materials in general; they will come to know much more fully than otherwise would be possible what it really means to organize materials with a view of making them meaningful. The latter result will be quite as important as the immediate service rendered. There is therefore a very close relation between the organization of courses of study in accordance with the standards suggested and the organization of the pupil's knowledge resulting from the mastery of the course.

5. The Use of Present Courses of Study in the Process of Rebuilding. Other Suggestions.

In the making of courses of study in accordance with the plan here suggested, present courses may in some cases be used to advantage. Some courses already provide scattering problems in some of the branches of study, and these may then be used as above suggested. Systems VIII, IX, and XII are cases in point.

Thus System VIII suggests problems in physiology and geography; System IX in physiology; and System XII in nature study and geography. In many courses the topics to be taught are here suggested in some detail and therefore afford some guidance as to the materials to be presented to the pupils. The courses of Systems I, VIII, X, and XII could be used in this manner. Again present courses in some instances offer suggestions as to the final organization of materials to be aimed at. System I is an illustration of this point. Many courses offer no aid whatever in this respect.

The task of making a course of study upon the basis here suggested is one of considerable magnitude and, as has been previously suggested, will require the coöperation of teachers and supervising officials. In fact, in some communities at least, intelligent laymen might be consulted as well and valuable suggestions obtained in this manner. The latter would very often be able to suggest problems of vital importance as well as data of a certain kind not easily obtainable by supervisors and teachers. To the task of making the curriculum afresh must be added that of keeping it up to date. Frequent revisions will be necessary for this purpose. In many instances what makes a problem vital is the fact that it relates to some current event; in such a case another problem will have to be substituted within a comparatively short time. The revision of some part of the curriculum would probably very frequently become the order of the day at teachers' meetings. This will make it possible for supervisors to motivate teachers' meetings far beyond present possibilities, for it will then become necessary to discuss the really live issues of teaching and thus make possible that intelligent coöperation between teachers and supervisors so essential to best results.

CHAPTER FIVE

THE APPLICATION OF THE PRINCIPLES STATED TO CURRICULUM-MAKING — TYPE ILLUSTRATIONS

IN the present chapter an attempt has been made to illustrate the principles stated in the preceding chapters. The problems selected for the purpose represent industrial work, nature study, sanitation, geography, arithmetic, and history. They differ in comprehensiveness, the first being the least comprehensive. They differ also in remoteness from the immediate, practical needs of the individual. The first, "How can I make a rug for my doll house" — representing industrial work — is one relating to the child's present, "practical" affairs, his life of action, and is an illustration of the type of problem called above, the "problem of action." The second problem, "How shall we protect our porches from the hot summer sun, making them as cool and attractive as possible?" is an illustration of the class called above, the problem of "the concrete whole." Most of the other problems are of the third type aiming at the development of a concept or the application of concepts in the explanation of a difficulty stated in the problem. The problem, "Why do Americans like to travel in the United Kingdom?" has for its purpose fixing certain facts previously used in connection with other problems and certain others having a conventional value.

PROBLEM I

How shall we make a rug for our doll house?

REFERENCES.

1. Rouillion, "Economics of Manual Training."
2. Wheeler, "How To Make Rugs."

The house has been built; paper has been hung. Furnishing the house is the next step. The first problem that arises is "What shall be done with the floors?" The assumption is that children will decide to cover some of the floors with rugs. Consequently the problem:

How shall we make a rug for our parlor?

1. What kind of material shall we select for the rug?

We might use

Rags — A rug of this kind would be quite durable, and the material can easily be gotten. 2:22

Cotton-roving — A finer material than rags and easily worked into rug. More pleasing colors — Cheap.

Coarse yarn — Germantown. Makes a fine rug. Pattern rug could be made from this material. A finer material than cotton-roving and better suited to the small rooms of a doll house.

Jute — Inexpensive; easily worked (harsh rug).

Raffia — Also inexpensive; easily woven. Softer than jute.

2. How to weave the rug?

Reference — 1:29. 2:28-42.

Children make the rug.

Which rug is best suited for the parlor?

Consider material, workmanship, appearance, suitability for purpose.

NOTE. The statement of a conclusion would be impossible here because the workmanship of the pupils will play a very important part in the appearance of the rugs made.

PROBLEM II

How shall we protect our porches from the hot summer sun, making them as cool and attractive as possible?

REFERENCES.

1. Meier, "School and Home Gardens."
2. Burkett, Stevens and Hill, "Agriculture for Beginners."
3. Bailey, "Garden-Making," pp. 291-302.
4. Spring Hill Nurseries catalog.
5. "Helps to a Beautiful Home," Peter's Nursery Co., pp. 18-20.
6. Catalog, Bobbink & Atkin's Nursery, Rutherford, N. J., pp. 69-73.
7. Catalog, Storrs & Harrison, Painesville, O.

Have the children recall some houses which make ideal summer homes. Why do they? Usually such houses are surrounded by spacious lawns planted with shade trees, flowers and shrubbery. Often the houses are covered with vines giving them an attractive and cool appearance. Such homes are ideal in summer for both play and rest.

Why do not people in general provide cool and attractive summer homes? Many houses are not so situated as to have shade sufficient for the comfort of the occupants. Shade trees are lacking. In many cases it would require a considerable number of years before trees planted at the present time would afford much shade. Shading the house by means of trees is therefore impossible in many cases; what could be done under these circumstances to make at least the porches as cool as possible? (Porches might be shaded in some manner.)

1. What are the several means which we might use for the purpose?

(a) Shades; cloth, bamboo, wood.

(b) Vines of various sorts. 4:37; 5:18.

2. Why would vines be preferable to shades?
 - (a) They are more attractive. See illustrations 2:268-269; 7:128-129; 4:37.
 - (b) They are cooler. See 2:268, for illustration.
3. What kind of vine shall we select for our purpose?
 - (a) It must afford an abundance of shade.
 - (b) It should grow rapidly so as to give us shade early in the summer.
 - (c) For purposes of ornamentation it would be well to have a flowering vine.
 - (d) It should be rather inexpensive.
4. What vines would meet these conditions?
 - (a) Of those which the children know. Have children recall or observe vines of the community with the preceding points in mind. Morning glory, wild cucumber, clematis, etc., may be mentioned.
 - (b) Some which the children may not know: Virginia creeper; wistarias; Japanese honeysuckle; etc. Study these vines first hand to determine which would be most satisfactory for our purpose. (Residences where these vines may be seen might be indicated here.) See also photographic illustrations: 7:129.

For descriptions see 1:164-167.

PARTIAL SUMMARY: "The Virginia creeper has beautiful, five-pointed leaves that turn to rich crimson in autumn. . . . It is a quickgrowing vine, and there is nothing superior as a shade plant for arbors and verandas." While it will do best in a rich loam it will grow in any kind of soil. It requires no protection in winter. This plant will therefore be our choice.

5. Where may it be secured?

Storrs & Harrison, Painesville, O., at 20¢ each or 10 for \$1.50.

Spring Hill Nursery, Tippecanoe City, O., at 20¢ each or 6 for \$1.00.

6. How shall it be planted?

No special preparation of ground is needed, although, to secure best results, a trench may be dug and filled with rich loam and leaf mold. 1:164.

7. What support and care does it require? 1:164.

FINAL SUMMARY: The most satisfactory vine for covering a porch is the Virginia creeper. It is quick-growing, affords excellent shade, grows in any kind of soil and requires little care. It may be secured from Storrs & Harrison, Painesville, O., at 20¢ each or 10 for \$1.50, or from Spring Hill Nursery, Tippecanoe City, O., at 20¢ each or 6 for \$1.00. To do its best it should be planted in trenches about one foot or more deep filled with loam. Wires may be strung for its support.

PROBLEM III

Tuberculosis

REFERENCES.

1. Ritchie, "Primer of Sanitation," chapters XIII and XIV.
2. Ritchie, "Human Physiology," chapter XXVI.
3. Willis, "Essentials of Health," chapter XXXIX.

Note the prevalence of the disease. Its various forms. Some forms are common in children. Most people tuberculous. (1:61) Cost of the disease. Number of deaths per year. Danger to all of us. (1:53-55) (2:340)

What can we do to help in the fight against tuberculosis?

1. To know how to fight it successfully

(a) We must know how the disease is caused.

The germ of tuberculosis: its nature; where found; conditions under which it thrives. (1:54) (2:340-341)

(b) We must know further how the disease is communicated.

How the germs are taken into the body.

By inhaling them. (2:342; 1:55)

By taking them in with our food. (2:341; 1:55)

Sources with which people are likely to come in contact.

The rooms of consumptives, dishes, clothing, sputum deposited in public buildings and conveyances, etc.

Milk and meats.

References. (1:55-56; 59-60; 2:341-343)

Tuberculosis is not inherited. (1:67-68)

(c) We must know further what people are most likely to contract the disease.

Those whose systems are weakened from over-work, lack of good food, lack of fresh air, and from other diseases.

Those whose systems are weakened by alcohol. (1:58-59)

(d) We must also know what are effective methods of treating those who suffer from the disease.

Importance of rest, nutritious food, fresh air, warm and dry clothing, cheerfulness, and a good physician. (1:65-66)

Why patients should be treated near or at home rather than in distant states.

Why state sanatoria are valuable factors in the treatment of tuberculosis. (1:66-67)

Why the disease should be treated in the early stages. (1:61-62)

REFERENCES. 1:61-70; 2:343-346; 3:272-275.

2. What can we do to fight the disease?

(a) We should make an effort to keep ourselves free from it.

How this can be done.

(1) We must keep our bodies strong to resist the disease, breathing an abundance of fresh air, taking plenty of exercise, eating nutritious foods, abstaining from alcoholic liquors.

(2) We must be on our guard against infected sources, infected houses, public buildings, drinking cups, etc. and careless consumptives.

(3) We must be on our guard against infected foods, especially milk.

(b) We may make an effort to keep the disease from spreading by making our homes and public places as sanitary as possible. Thus, (1) we may insist upon thorough ventilation.

(2) we may insist that people do not expectorate in public buildings and conveyances. There are laws to this effect and we should aid in their enforcement.

- (3) Houses known to have been inhabited by consumptives should be thoroughly disinfected before others live in them.
- (4) Public halls and conveyances should be disinfected at regular intervals.
- (c) We may aid those who suffer from the disease to get well.
 - (1) We may advise them against the use of patent remedies and quack physicians.
 - (2) We may suggest consultation with a specialist.
 - (3) We may in some cases advise upon the essentials of good treatment and aid in its enforcement.
 - (4) We may give financial aid for the establishment or maintenance of sanatoria, or for the support of individual patients.

CONCLUSION: Tuberculosis is a germ disease transmitted usually by inhaling the germ or taking it into the body with unsanitary foods. People whose systems are weakened in any way are especially subject to the disease. The principal factors in its treatment are abundance of fresh air, rest, nutritious food, and a good physician. We may fight it (a) by keeping our bodies strong to resist the germ; (b) by making our homes and public places sanitary; (c) by aiding those who suffer from it with advice and money to get well.

PROBLEM IV

Why does Great Britain buy wheat, meat, other foodstuffs, and cotton of America, and why does she pay for them in manufactured goods?

REFERENCES.

1. Tarr & McMurry's New Geography — Second Book.
2. Dodge — Advanced.
3. Dryer, High School Geography.
4. Statesman's Yearbook, 1913.
5. Brigham's Commercial Geography.
6. Allen's "Industrial Studies" — Europe.

Recall the exports of the United States to Great Britain. (What products does America sell to Great Britain?) United States: Cotton, breadstuffs, meat and dairy products, mineral oil. Canada: Meat, hides, cheese, wheat and timber. See Tarr & McMurry, New Geographies, Second Book, p. 411; also Dodge's Advanced Geography, p. 186. Note the nature of these exports.

1. Why does Great Britain buy foodstuffs of America?
Why does she not produce them at home in sufficient quantities for her people?
 - (a) Are conditions in Great Britain favorable for agriculture?
 - (1) *Surface.* Much of it is rocky and mountainous, unfit for farming. Locate highlands of Scotland (Grampians), Northern England (Cheviot Hills and Pennine Range), and Wales (Cambrian Mountains). Locate the lowlands of Scotland and England.
Find approximately the amount of land suited for agriculture. Locate the highlands and lowlands of Ireland. About how much of the surface seems suited for agriculture?

- (2) *Climate.* Oceanic; in spite of high latitude not very cold at any time during the year. Abundant rainfall everywhere; more of the western than on the eastern coast of the country. See map of rainfall, Tarr & McMurry, p. 264.
- (3) *Soil.* Very fertile generally on lowlands, but rather sterile in eastern and England.

REFERENCES. Tarr & McMurry's *New Geography*, Second Book, p. 264; Dodge, *Advanced Geography*, pp. 226-227.

Conditions for agriculture are quite favorable for, while highlands occupy nearly all of Scotland and considerable parts of England and Wales, the soil of the lowlands is fertile and the climate is humid and mild.

- (b) To what extent do the British make use of their opportunities for agriculture?

- (1) Proportion of land tilled: 32 % in England and Wales. (3:437)
Manner of tilling land. Yield per acre. (5:306; 4:60-61)
- (2) Principal crops raised: oats, barley, wheat; turnips, potatoes, beans, peas; flax and hops. (1:265; 2:227)
- (3) How these crops are distributed. Why? (2:227)
- (4) Proportion of land in pasture. About two-thirds of area. (2:227) Why? (1:265)
- (5) Products of the pasture lands. What are they? Cattle, giving meat, butter, milk, cheese, and hides; sheep, furnishing meat, wool, hides. (1:265; 2:227)
The value of these products. (4:61)

CONCLUSION: The lowlands and plains of Great Britain are tilled carefully, wheat, oats and barley being raised with a higher average yield per acre than in other countries. Turnips, potatoes, beans and peas are also raised in large amounts. Parts of the country too rough and rocky for farming, or having too sterile a soil are largely used for pasture lands, about two-thirds of the country being used in this way. Cattle giving meat, butter, milk, cheese, and hides; sheep, furnishing mutton, wool, and hides are produced in these lands. These products are of considerable value. It would seem therefore that the British make good use of their agricultural resources. If more grain and root crops were produced this would probably be done at the risk of reducing the meat supply.

- (c) How do England's fisheries aid her in solving her food problem?

- (1) Where do the English fish? (1:266)
- (2) The kinds of fish caught. Sole, cod, haddock, herring.
Oyster fisheries along south coast. Salmon in rivers of northern Great Britain. (1:266)
- (3) The importance of the industry: number of men and vessels employed. (1:266)
- (4) Principal fishing centers: London, Hull, Grimsby, Aberdeen, Great Yarmouth, Harwich.
- (5) Value of the product. Second only to the United States. (2:229)
Supply is sufficient to meet the demand. Worth \$50,000,000 in 1908. (5:310) (4:65)

CONCLUSION: Because of the nearness of excellent fishing grounds in the North Sea and in the ocean north and west of the islands the British are enabled to secure fish to the value of about \$50,000,000 per year. Sole, cod, haddock, herring are caught in the ocean, oysters along the south coast of England, and salmon in the rivers of Northern Great Britain. The quantity of fish caught is sufficient to meet the demand.

- (d) Even with the aid of the fisheries, however, Great Britain does not succeed in supplying sufficient foodstuffs for her people, for her population is about 45,000,000 with a density of 634 per square mile in England and Wales. (3:437; 5:305-306; 2:226; 4:79)

How does Great Britain secure the necessary additional supplies?

- (1) From where do they come?

From the United States; wheat, meat, lard, butter, cheese.

From her colonies;

Canada: Grain, beef, dairy products. (2:186)

Ceylon: Rice, tea, cocoa. (2:307-308)

Egypt: Cereals. (2:282)

India: Rice, tea, wheat, oil seeds. (2:306)

The United Kingdom depends upon her colonies largely for foodstuffs.

- (2) Why do the English colonies send their surplus foodstuffs to Great Britain rather than to other countries?

Great Britain offers more favorable conditions to importers of foodstuffs than those countries in which foodstuffs abound. Thus in Great Britain foodstuffs are admitted free of duty while in many countries they are subjected to a high tariff. (5:318; 268)

Colonies need those things which the mother country can supply.

Colonies use the same language as the mother country. (1:275)

- (3) How these foodstuffs are brought to Great Britain.

Note the ports in colonies and foreign countries from which foodstuffs are sent to the United Kingdom.

New York, Montreal, Colombo, Alexandria, Bombay, Calcutta, Madras.

Note the sea routes by which they are brought to Great Britain.

Locate the chief ports of entry and observe the importance of each: London, Liverpool, Glasgow. (1:272-274; 2:231)

Note the means of distribution: railroads and canals. (5:312-314; 315-316)

CONCLUSION: Since Great Britain is unable to provide sufficient foodstuffs for her people through agriculture and fisheries she is compelled to import some from the United States, Canada, Egypt, India, Ceylon, etc. All of these imports must be brought across the seas, some coming through the Suez Canal, the Mediterranean, and the Strait of Gibraltar, while others are brought across the Atlantic Ocean. The chief ports of entry are London, Liverpool, and Glasgow. From these ports they are distributed to the various manufacturing centers over a system of canals and railways.

CONCLUSION to (1). Conditions on the whole are favorable in the United Kingdom and the people raise about as much of agricultural produce as possible. They supplement agricultural products with fish but do not succeed in meeting the needs of the country for foodstuffs. Much must be imported from the United States and the British colonies.

2. Why does the United Kingdom pay for the foodstuffs and raw materials she buys from the United States, other foreign countries, and her colonies with manufactured goods?

What she gives in return for imports of foodstuffs will be indicated by her exports to the United States, her colonies, etc.

What are our principal imports from the United Kingdom? Cotton goods, woolen goods, tin, manufactured fibres, pottery. (1:411)

What does Great Britain export to Canada? Steel manufactures and woollens.

What are the United Kingdom's exports to Egypt, India, Ceylon?

Woolen goods, cotton goods, and steel manufactures seem to be produced in sufficient quantities to be used in payment of the imports of foodstuffs. (1:410-411; 2:xi-Appendix)

How can the United Kingdom manufacture woolen goods in sufficient quantities to export them?

- (a) Where is the raw wool obtained?

Is there an abundance of raw wool produced in the country?

Recall what has been said on this point. (1:265)

Not sufficient to account for the exports of woollens?

From what other sources is the deficiency made up? (6:84)

- (b) Where the raw wool is manufactured into cloth and yarns.

(Bradford and Leeds with surrounding towns constitute the chief wool-manufacturing district. (1:268)

- (c) What conditions favor the manufacture of woolen goods in this region? Historic causes. (5:308-309)

Presence of some of the raw material because of nearness to sheep-growing region.. (1:268)

Nearness to coalfields.

- (d) The value of the product; importance of the industry. (4:70)

- (e) Why the product is so desirable. (Fine quality.)

CONCLUSION: The United Kingdom is able to export woollens in large quantities because

- (a) raw wool is produced in great quantities in Scotland and England;
- (b) additional wool for manufacturing purposes is easily imported from the colonies and from foreign countries;
- (c) coal and water power are readily available for running the mills;
- (d) The product is in great demand because of its superior quality and therefore its manufacture is profitable; it is manufactured in much larger quantities than needed for home consumption.

REFERENCES. 1:267-268; 2:30; 5:308-309; 6:83-87.

3. Why does the United Kingdom engage so extensively in the manufacture of cotton goods?

- (a) Importance of the cotton industry.

- The cities engaged in its manufacture. Manchester and others in that region. (5:309; 5:306-7)
 The number of men employed. (6:80)
 The amount of raw cotton used. (1:268)
 Value of product. (4:70)
- (b) Why cotton goods are successfully manufactured in the United Kingdom.
 Skilled labor in abundance.
 Climatic conditions are favorable.
 Coal for power is easily obtainable.
 Raw cotton is easily imported from United States and Egypt.
- (c) Product is valuable because of the constantly increasing demand for it. (5:38-39)

CONCLUSION: The English people engage extensively in the manufacture of cotton because:

- (a) the product is valuable; the demand for it almost universal;
 (b) conditions for the successful manufacture of cotton goods are most excellent, England having skilled labor in abundance;
 (c) favorable climatic conditions;
 (d) coal within easy reach;
 (e) raw cotton brought by boat to within a few miles of the manufacturing district.

REFERENCES. L; 268-269; 2:229-230; 6:80-83; 5:306-307.

4. Why the iron and steel industry has become so prominent in the United Kingdom.
 (a) The demand for various kinds of iron and steel goods excellent, especially in the colonies of the country.
 (b) This demand the British try to meet as may be seen from the variety of articles produced in the various centers:
 Birmingham: Railroad irons, steam engines, bicycles, firearms, watches, jewelry.
 Sheffield: Armor plate, steel rails, cutlery.
 Glasgow: Locomotives, machinery, ships.
 (c) The conditions for the manufacture of iron and steel goods are very excellent in the various centers for iron ore, coal, and limestone are found in close proximity to each and in great abundance. (1:267-269; 2:229-230; 6:87-91)

CONCLUSION: The iron and steel industry has developed so greatly because of the demand for this class of goods. The United Kingdom finds an excellent market for its product in its colonies. Conditions for the manufacture of this class of goods are excellent.

REFERENCES. See (c) above.

5. It will be noted that both foodstuffs and raw materials used for manufacturing, on the one hand, and the manufactured goods on the other, have to be carried for thousands of miles in some cases before they reach their destination. Here note again the sources of foodstuffs and of raw materials as well as the markets for the manufactured goods. How can

the United Kingdom ship her raw materials and her manufactured goods so great a distance profitably?

- (a) The goods are carried by steamships, in some cases almost directly to the manufacturing cities, or from these cities to the markets.

Note the proximity of the manufacturing centers to the seaports.

- (b) Some of the inland centers are connected with the ports by means of canals of which the United Kingdom has about 4000 miles. (5:313)

- (c) Steamship routes (note the principal ones) are owned by the British thus keeping the money paid out for freight in the country. (1:275; 410)

- (d) Steamers carrying manufactured goods out return laden with foodstuffs and raw materials thus reducing the cost of freight.

CONCLUSION: The United Kingdom, although thousands of miles away from the source of some of its raw materials and its markets, is enabled to carry on a successful commerce with her distant colonies and foreign nations because of her excellent shipping facilities, for the carrying is done in steamships owned by the British; steamers carrying the manufactured goods out to the colonies return laden with raw materials or foodstuffs.

REFERENCES: 1:275-276; 2:230; 5:311-314; 6:76-80.

FINAL CONCLUSION: Great Britain is compelled to buy foodstuffs and raw materials of the United States and her own colonies because she does not produce sufficient foodstuffs at home and is unable to supply the raw materials which she needs for some of her manufactures. She pays for them with manufactured goods — woolens, cottons, and steel — because the conditions necessary for producing them cheaply are very favorable and the cost of transportation of both raw materials and the manufactured articles is low.

PROBLEM V

Why does the United Kingdom maintain so large a navy?

REFERENCES.

1. The Statesman's Year-Book, 1913.
2. Dodge, *Advanced Geography*.
3. Tarr & McMurry, *New Geographies*; Second Book.

Recall recent newspaper accounts of the comparative size of the navies of the United Kingdom, France, Germany, United States. See also 1:54-60; 797-800; 872-875; 396-398. Note the cost of a "dreadnaught" and "super-dreadnaught" (\$8,000,000). Call attention to the objection of some of the American people to the expenditure of money for warships.

Why does the United Kingdom maintain so large a navy?

1. What is the use of a navy?

Protection in time of war; offence; defence.

2. Why does the United Kingdom need a navy for this purpose more than other countries?

- (a) To protect the importation of foodstuffs. How could an enemy of the United Kingdom cut off her food supply?

Many countries raise most of their foodstuffs at home; the United Kingdom, however, must import a considerable portion of them. Recall where they come from. (2:186; 307-308; 282; 306; 3:411; 1:79)

The superior enemy of the country could capture any ships bearing foodstuffs to Great Britain.

- (b) To protect the importation of raw materials for manufacturing.

Why could an enemy's fleet threaten her in this respect?

While the United States produces much of the raw materials for her manufactures the United Kingdom must import them in large quantities for her colonies and from the United States. (1:78) See also 3:74, 410-411. Recall the various imports of raw materials. An enemy's fleet superior to Great Britain's could completely cut her off from these important imports, depriving her people of their means of making a living.

- (c) To protect the United Kingdom's commerce.

How could a hostile fleet damage the country's commerce?

Because of her extensive manufacturing the United Kingdom produces immense quantities of manufactured goods which must be exported to foreign countries and to her colonies. (1:73-79)

An immense merchant marine is engaged in carrying the imports and exports of the country. (1:80; 3:410) A hostile fleet could drive this commerce from the seas and so not only deprive the British people of their food supplies and raw materials but also deprive thousands of British sailors of their employment.

- (d) To protect her colonies.

How could a hostile fleet interfere with the United Kingdom's colonies?

It could isolate the colonies like the mother country and even appropriate them, since the colonies look for their defence very largely to the mother country.

CONCLUSION: The United Kingdom must maintain a large navy,

- (a) to protect its importation of foodstuffs and raw materials;
- (b) to protect its commerce;
- (c) to protect its colonies.

PROBLEM VI

Why do Americans like to travel in England?

REFERENCES.

1. Coe, "Modern Europe"; pp. 18-91.
2. Stoddard's Lectures, Vol. IX.
3. Knox, "Boy Travellers, Great Britain and Ireland."
4. Allen, "Industrial Studies: Europe."

Recall the fact that many thousands of Americans annually cross the Atlantic for the purpose of travelling in Great Britain. Call attention to any local people known to the pupils who may have gone there for that purpose recently. Why do they go? What places of interest would they find?

1. They might visit places famous for their scenery.

Southern England. Its beautiful landscapes. (1:21-22; 2:169-197 for rural views)

The Lake Country; the region made famous by Coleridge, Southey, and Wordsworth. Factors in its beauty: Climate, ruggedness of region, the lakes, the vegetation. (1:47-48; 3:252-268)

The Loch Katrine region in Scotland, made famous by Scott.

The region is noted for beautiful lakes and high mountains.

"The lakes are studded with small islands." (1:69-70; *Lady of the Lake*)
Hebrides Islands. Iona and Staffa. Fingals Cave the point of interest on the latter; and Ancient Chapel on the former. (1:76-78; 2:101-111)

Lakes of Killarney. Famous for their beauty. (1:85-86)

Giant's Causeway. (1:90-91; 3:80-88)

CONCLUSION: Americans visit the United Kingdom for various reasons. The country affords much beautiful scenery, for Southern England has many beautiful landscapes; the Lake Country, made famous by Coleridge, Southey and Wordsworth is attractive to tourists because its peculiar climate; the ruggedness of the region, the lakes, and the vegetation combine to make this one of the most beautiful places in England; the Loch Katrine region in Scotland is visited by many because its numerous lakes with their many small islands and its high mountains makes the scenery the most noteworthy in Scotland. Iona and Staffa, two of the Hebrides Islands, are visited by some travelers, the former because of an ancient chapel and the latter because of a splendid cave washed out by the sea. The Lakes of Killarney, the most beautiful and famous lakes in Ireland and the Giant's Causeway, a large number of rock pillars extending out of the water, are places of scenic beauty in Ireland frequently visited by tourists.

2. Many of the authors whose books are read in American schools and homes lived and wrote in the United Kingdom and made some places famous through their writings.

Stratford-on-Avon, the early home of Shakespeare. (1:50-53; 2:165-177)

Abbotsford, the home of Sir Walter Scott. (1:66-67; 2:59 ff)

Ayrshire, the home of Robert Burns. (1:73-75; 2:20-37)

Dublin, the birthplace of Moore. (1:88; 3:52)

Gad's Hill, Rochester, home of Dickens, and some of the places made famous by Dickens. (2:207-224)

Stoke Pogis and its churchyard made famous through Gray's *Elegy*. (2:149-151)

CONCLUSION: The United Kingdom is visited by many Americans who are interested in the places made famous by its literary men. Stratford-on-Avon, the home of Shakespeare, Abbotsford, the residence of Sir Walter Scott, Ayrshire, made famous because of Robert Burns, Dublin, the birthplace of Tom Moore, Gad's Hill, Rochester, and other places made famous by Charles Dickens, Stoke Pogis and its churchyard remembered through Gray's *Elegy*.

3. Some cities prove attractive to tourists.

Liverpool with its very large harbor and extensive shipping. (1:19-20; 4:76-78; 3:286-289; 300)

Manchester, the great cotton manufacturing city of England. Ship

canal, docks, cotton mills, cotton exchange, technical schools, university. (4:78-83)

Birmingham, noted for iron and steel manufactures, lenses, stained glass, etc. (4:88-91)

London, the largest city of the world.

London Tower. (2:267-271; 4:95-96)

London Bridge. (2:23-24; 97-98)

Dicken's House, Devonshire Terrace and others. (2:292-295; some houses made famous by him: 2:297 ff.)

Houses of Parliament. (2:329-336; 4:96-97)

Glasgow, the great shipbuilding center, where the large ocean steamers are built. (1:72-73; 4:27-29)

Edinburgh, the beautiful capital of Scotland. (1:62-66; 2:47 ff.)

Dublin, the Irish capital. (1:87-89; 4:50-51)

CONCLUSION: Again some Americans are interested in manufacturing and other phases of city life. These find Liverpool interesting for its very large harbor and its extensive shipping; Manchester for its ship canal, docks, cotton mills, cotton exchange, its technical school and university; Birmingham for its extensive manufacture of iron and steel goods, lenses, stained glass, etc.; London for its size, its Tower, London Bridge, Westminster Abbey, the Houses of Parliament; Glasgow for its extensive shipbuilding; Edinburgh for its beauty, and Dublin, the capital of Ireland.

FINAL CONCLUSION: Americans visit the United Kingdom because of its places of scenic interest such as the Lake Country, the Loch Katrine region in Scotland, Iona and Staffa of the Hebrides Islands, the Lakes of Killarney and the Giant's Causeway in Ireland. They also find it interesting to visit the places made famous by its literary men; such places as Stratford-on-Avon, the home of Shakespeare, Abbotsford, the home of Scott, Ayrshire, the home of Burns, Dublin, the birthplace of Tom Moore and others, Gad's Hill, Rochester, one of the homes of Dickens, etc. Again some of the cities present interesting sights to tourists because of their factories, transportation facilities, etc. Among these may be mentioned Liverpool with its large harbor and docks, Manchester, the great cotton manufacturing center of the country, Birmingham, the center for the manufacture of iron and steel goods, London, the capital of the country, Glasgow, for its shipbuilding, Edinburgh, the beautiful capital of Scotland, and Dublin, the capital of Ireland.

PROBLEM VII

How does the British Government encourage manufacturing and commerce?

REFERENCES.

1. Tarr and McMurry, *New Geographies*, Book Two.
2. Dodge, *Advanced Geography*.
3. Allen, "Industrial Studies," *Europe*.
4. *Statesman's Year-Book*, 1913.
5. Mace, "School History of the United States."

Recall how the United States protects its industries by means of the protective tariff. Importers of foreign merchandise must pay "duty" on it before it is admitted to this country. Enumerate some of the articles and produce on which

such duty must be paid. How does a high tariff "protect" the country? (It raises the price of the imported article so that the manufacturer in this country can charge a higher price for his product.) The tariff is often considered in our country as a means for developing manufacturing. The United Kingdom has no tariff on raw materials, yet manufacturing is very extensive.

How does the British government encourage manufacturing and commerce?

(a) By admitting raw materials free of duty.

Why does the United Kingdom admit raw materials free of duty?

Recall the fact that there are not sufficient raw materials in the country; that all of the cotton, much wool, lumber, oil seeds, hides, etc., must be imported from the colonies and foreign countries. (1:410-411; 3:81; 4:77)

To make the raw materials more expensive would increase the price of the manufactured article; this increased cost would have to be paid either by the home population in case of home consumption or by foreign nations in case exported. In case the article is to be shipped to countries having a tariff the several tariffs levied upon it (that imposed upon the raw material and that upon the manufactured article at point of entry in foreign country) would make the cost of it so high that it probably could not compete at all with the similar product at home.

CONCLUSION: By admitting raw materials free of duty the United Kingdom decreases the cost of the finished product and so enables her factories to compete with those of foreign countries.

(b) By training her workmen more thoroughly than formerly. Recall the fact that in many of her factories skilled workmen are needed, in fact that the success of many establishments depends upon the skilled workmen. What does the United Kingdom do to train its workmen? (4:30)

(c) By providing markets for manufactured goods.

What does the government do to provide markets for the surplus product of her people's manufactures?

Recall the fact that the United States was once a colony of the United Kingdom; that even at that time the mother country did not like to have her colonies manufacture articles but wished to supply them from her own factories. (5:137)

Note again the chief colonies of the United Kingdom: Canada, Egypt, East India, the South African Union, British East Africa, Australia.

Note the importance of these colonies to the mother country when judged by the quantity of imports from the mother country. (4:75-76)

CONCLUSION: The English policy of colonizing territory in different parts of the world has proved of great importance to her manufacturers by providing them with advantageous markets.

(d) By subsidizing ships for commerce.

How the United Kingdom encourages her merchant marine.

Certain steamship companies are paid considerable sums of money for the maintenance of ships of a certain tonnage and speed. Such

ships are used by the companies, but may be called for by the government in time of war to be used for war purposes.

CONCLUSION: By subsidizing the merchant marine the United Kingdom encourages the carrying trade of the country, making the merchant marine of that country by far the greatest of all countries, and making it possible in this way that most of the commerce of the country is carried in British bottoms.

FINAL CONCLUSION: The British government encourages manufacturing and commerce in several ways:

1. By admitting raw materials free of duty it enables the British manufacturer to compete with foreign rivals successfully.
2. By training her workmen in recent years she is attempting to meet the demand for skilled labor in her factories.
3. By colonizing territories in different parts of the world she has established markets for the surplus manufactures of her people.
4. By subsidizing the merchant marine she makes it possible that most of the British commerce is being carried in British bottoms, thus keeping the money paid out for this purpose in her possession.

PROBLEM VIII

What are the conditions essential to the development of a manufacturing center?

REFERENCES.

1. Tarr & McMurry, *New Geographies*, Book Two.
2. Dodge's *Advanced Geography*.
3. Keller and Bishop, *Commercial and Industrial Geography*.
4. Brigham, *Commercial Geography*.

Review the essential factors in the development of Minneapolis — as a milling center. Nearness to the wheat fields of the Northwest; location on the direct route to the markets of the East and of Europe; water power. Recall that Chicago must ship in its raw materials, in some instances a long distance; that this city must use steam instead of water power; that the New England cities must import their cotton and the coal used in running the mills; that much of their product must be shipped to distant localities. Neither water power nor proximity to raw materials, markets, or coal mines seems to be an essential factor in making cities important manufacturing centers.

What are essential factors which make cities important manufacturing centers?

1. Is nearness to raw materials one factor? Apparently so in case of Minneapolis, Birmingham, Alabama, Atlanta, etc. (1:113, 79, 82). This is not the case, however, with cotton manufacture in the New England cities, Fall River, Lowell, Manchester, etc., nor with the manufacture of iron and steel goods in Pittsburg, Cincinnati, etc. In each case the raw materials have to be shipped long distances before they reach the factories.

It is evident therefore that nearness to raw materials is not one of the conditions of a successful manufacturing center; good transportation facilities will make it possible for cities to have the necessary raw materials shipped in. (4:205)

PARTIAL SUMMARY: While nearness to raw materials is not an essential factor in the development of manufacturing centers, accessibility of raw materials is; when therefore a city is located some distance from the source of raw materials, good shipping facilities are an important factor.

2. Is water an essential factor? It would seem so from the study of Minneapolis where it plays an important role; but many important manufacturing cities do not have water power. Chicago, St. Louis, Cincinnati, New York City, Philadelphia, etc. use steam instead of water power, while others still use electric power. (1:65)

PARTIAL SUMMARY: While water power is not an essential factor in the development of a manufacturing city some form of power must be available. This may be either steam or electric power in the absence of water power.

3. Is nearness to markets an essential factor? It would seem so, for many large manufacturing centers are favorably located in this respect. Thus farm machinery is manufactured very largely in the North Central States, and here principally in Illinois, the state nearest the principal farming region of the country. (4:214) The cotton mills of both New England and Great Britain also illustrate this point. Many manufacturing centers are not located near the markets. Thus Omaha and Kansas City packing meat, Minneapolis producing flour are not located near the principal markets, but they are located on the way between the source of the raw materials and the ultimate markets. Even this is not necessary, however, for much of the cotton cloth manufactured in the New England cities must be shipped out of that section to the western states. This is rendered possible because the freight on the light goods is comparatively small.

PARTIAL SUMMARY: While nearness to markets is not an essential factor it is a very important one in the development of a manufacturing center. Unless freight rates are low on the articles manufactured in cities remote from markets, such cities would find it difficult to compete with those more favorably situated. Accessibility to markets is an essential factor in the development of manufacturing centers.

4. What part does labor play in the development of manufacturing centers? Cities like Brockton, Mass., Gloversville, N.Y., Cincinnati, Ohio, require skilled workmen. Cotton manufacturing had a very late start in the South because of the lack of skilled labor. Collars and cuffs are manufactured very largely in Troy and Glens Falls because of the skilled labor available for the purpose there and lacking elsewhere. (4:208, 209-210, 213)

PARTIAL SUMMARY: Skilled labor is an essential factor in the development of a manufacturing center; without it manufacturing becomes impossible. The importance of some manufacturing centers like Gloversville, e.g., depends almost wholly upon skilled labor.

5. A locality having power in some form, intelligent labor, and a favorable situation with reference to raw materials and markets has most of the essential elements of a good manufacturing city. However, it was observed in the study of Minneapolis that large mills had been erected for

grinding the wheat, that wheat had to be bought and ground and then shipped thousands of miles in some cases to reach the markets. It would seem therefore that money with which to run manufacturing establishments is an essential factor in the success of manufacturing centers. Is this assumption correct? Note the extensive establishments of the meat-packing industry in Chicago, the iron works in Pittsburg, the large cotton mills in the New England cities and consider how impossible it would be to manufacture any of these and other classes of goods without capital. Capital is undoubtedly an essential factor for extensive manufacturing; it seeks for investment those places where the four other factors are most favorable. (4:206, 208)

PARTIAL SUMMARY: Capital for financing manufacturing establishment is another essential factor in the development of manufacturing centers.

FINAL SUMMARY: The following factors seem to be essential in the development of manufacturing centers:

1. Raw materials must be available either because of nearness to the source of supply or because of cheap shipping rates.
2. Power in some form must be obtainable. The cheapest power is water power; most of the manufacturing establishments, however, must resort to the use of steam and some to electricity. In the second case cheap coal rates, or nearness to the coal mines are important.
3. Accessibility to markets is an indispensable condition.
4. Skilled labor must be available.
5. There must be capital to finance manufacturing enterprises.

PROBLEM IX

How will the Federalists succeed in establishing the credit of the new government at home and abroad?

REFERENCES.

1. Hart, "Formation of the Union," p. 155 ff.
2. Walker, "Making of the Nation," p. 78 ff.
3. McMaster, "History of the People of the United States," Vol. II, 28-55.
4. Hart, "Source Reader No. III," 45-96.
5. Mace, "School History of the United States," 223-226.
6. Doub, "History of the United States," 332-337.
7. Woodburn and Moran, "Elementary American History and Government," pp. 204-207.
8. Fiske, "The Critical Period in American History."
9. Schouler, "History of the United States," Vol. I, pp. 144-156; 173-177.
10. Guitteau, "Government and Politics in the United States."
11. Bassett, "A Short History of the United States."

The financial situation of the country when the Federalists came into power.

States are deeply in debt in many cases. The country owes large sums both at home and abroad. Consequences: The country's credit is gone; no more money can be borrowed. Interest on debt cannot be paid; soldiers must go without pay due them. There is no money to meet the current expenses of the government.

People distrust the government and hoard their money so as not to lose it. Business is at a standstill. (6:279-281; 8:134-186)

How will the Federalists succeed in establishing the credit of the New Government at home and abroad?

How does the federal government raise money for its maintenance today? (10:346-355)

- (a) By tariff.
- (b) By income tax.
- (c) By tax on tobacco, spirits, Excise.
- (d) By issuing bonds at times (when large sums are needed at once).

How does a state raise money? (10:190-204)

By direct taxation usually. Different taxes included here: Property; inheritance; income.

By issuing bonds at times.

The advantages and disadvantages of the several methods.

The tariff is easily administered: Very little machinery is required for the purpose. People pay it without being aware of paying a tax.

It falls unevenly upon different sections of the country, or different classes in same section.

Direct taxes make necessary rather complicated machinery of administration.

It is difficult to ascertain the actual amount of property owned by the people taxed.

It becomes objectionable because of the obtrusiveness of the machinery for administration. People know they are being taxed.

What has been said of the tariff holds good of other indirect taxes, of course.

Which of these methods of raising money would probably be suited to the needs of the federal government in the time of Washington's administration?

Tariff — because easily collected and without its being apparent to people.

Issuing of bonds — to meet large and unusual payments.

1. How congress attempts to provide money for the immediate needs of the government, the running expenses and the interest on the public debt.

(a) Madison suggests a tariff on imports which Congress finally adopts. (11:257)

(b) What articles were suggested for tariff. (3:580 ff.; 9:87 ff.)

(c) On what basis the selection was made.

(1) Luxuries should be taxed: wines, spirits, tea, coffee, molasses, sugar.

(2) Products manufactured at home should be taxed: iron and steel goods, paper, leather goods, woolen and cotton goods, coal.

(3) Local influences enter in determining the products needing protection.

(d) How the tariff was to be collected.

Coast is divided into collection districts.

Ports of entry and export are established.

The appointment of collectors is provided for.

(e) Result of the tariff act. (Income of \$200,000 per month)

CONCLUSION: To provide money for the current expenses of the government Congress enacts a tariff law taxing luxuries and articles manufactured at home. For the efficient administration of the tariff law collection districts, ports of entry and export, and collectorships are established. The income derived from the tariff is \$200,000 per month which is ample for the purpose.

REFERENCES: 6:332-333.

2. While the income derived from the tariff would meet the necessary current expenses of the government and probably the interest on the public debt carried by foreign nations, Congress was in ignorance of the extent of the country's indebtedness at home and therefore requested the secretary of the treasury to make a report upon the actual status of the country's financial affairs. This report showed
 - a foreign debt aggregating \$12,000,000;
 - a domestic federal debt of \$42,000,000;
 - state debts incurred in war and still unpaid of \$21,000,000. (11:259)

How the Federalists took care of these debts.

- (a) What Hamilton suggested concerning the manner in which these debts should be paid and the reasons he gave for his plan.

- (1) The nation should assume the state debts.
- (2) The entire debt should be funded. (6:335)
- (3) His reasons for this course:

Public credit depends upon good faith of the government toward its creditors.

The measures suggested will establish public confidence by assuring payment of debts at face value.

(9:132; 6:332-335)

- (b) Why some of Hamilton's recommendations were opposed by some people.

- (1) Why people objected to paying the domestic debt in full. (11:259)

Payment of interest alone would cause ruinous rate of taxation.

People accepting the certificates originally did not expect payment in full.

Original holders of certificates would not receive the benefit of full reimbursement, but speculators instead.

- (2) Why people objected to the assumption of state debts. (11:259-260)

They held that

It was unfair to the states who had nearly paid their debts;
This additional burden would necessitate additional taxation and so encroach upon the rights of the states in this respect.

- (c) How the Federalists bargained for assumption. (11:260)

They promised the South the location of the capital on the Potomac if the assumption bill should become a law. Two Virginians were to vote for assumption while certain northern congressmen were to vote for location of capital on Potomac.

(d) How Congress finally decided the matter.

Both the bill for assumption and that for funding the debts of the country are passed. \$12,000,000 to pay the foreign debt is to be borrowed and money to be reimbursed within 15 years. Loan for the domestic debt is authorized providing that two-thirds of the amount should draw interest at six per cent from January 1, 1791; the remaining one-third at the same rate from 1800. Arrears of interest were to be funded at full value and to draw interest at three per cent from July 1, 1791, redeemable at pleasure of the government.

REFERENCES: 2:78-80.

CONCLUSION: To care properly for the debt of the country, both the foreign and the domestic, the federal government is to assume the payment of the state debts incurred in the Revolutionary war, fund the entire debt of the country at face value.

3. The assumption of the state debts created a deficit in the treasury calling for a larger amount of money for the payment of interest. More money must therefore be provided. (11:260-261)

How were additional funds to be secured?

(a) Why the tariff could not be increased on imported articles. (Would stop importation altogether.)

(b) What Hamilton proposed.

(1) An excise, duty on distilled spirits.

(2) A national bank.

(c) What Hamilton expected of these measures.

(1) Duty on distilled liquors would increase revenue. Federal machinery for collecting it would be light. By increasing the tariff on imported spirits the home manufacturers would suffer little. The more intelligent part of the community would gladly see the use of spirits discouraged.

(2) Sale of the stock of the bank would render more money available for business and government.

Through the bank money could be borrowed, collected and paid out.

(d) Why people objected to the proposed laws.

(1) Excise law. (3:26-28)

The national government should not tax our own products.

The law would be unfair since it reached only a part of the people.

(2) National bank. (3:29-31)

It would constitute a dangerous power in politics.

It would be unconstitutional.

(e) How the argument of unconstitutionality was answered.

Constitution grants certain "implied powers."

(f) How Washington felt concerning the opposition arguments.

(3:35-36)

Calls for statements from both Jefferson and Hamilton.

- (g) How the measures were finally disposed of by Congress. (3:32)
 Congress passes both bills, limiting the charter of the bank to twenty years.

CONCLUSION: To provide additional funds for the government Hamilton proposed an excise bill which after vigorous opposition was passed by Congress. He likewise advocated a national bank. Through such an institution he held a "much-needed and safe currency" would be provided; "it would enable the government to sell its bonds quickly at home and abroad; it would furnish a safe and cheap means of exchange for the people"; "it would enable the government to transfer its funds cheaply; and it would furnish a safe place for the keeping of public funds."

While there was much opposition to the measure on the ground that the bank would be a dangerous power in politics and that it would be unconstitutional, Congress finally passed the bill.

4. How did the financial measures of Hamilton affect the confidence of the people in the new government? (5:224-225; 11:261, 267-269)
 - (a) Both Europeans and Americans had more confidence in the new government as shown by
 - people bringing their money from hiding;
 - increased foreign and domestic commerce;
 - growth of manufactories.
 - (b) In the course of the debates of funding, assumption, and the national bank clearly defined differences became apparent with regard to the interpretation of the constitution, one group favoring strict Construction while the other group loose or liberal Construction.
 - (c) Some of the farmers of Pennsylvania opposed the excise law so bitterly that they rebelled against its enforcement and resorted to arms.
 They were speedily quieted down by the federal government, however.

CONCLUSION: To establish the credit of the country the Federalists:

1. levy a tariff to provide for current expenses;
2. assume the debts of the states incurred for the war and fund the total debt of the country;
3. pass an excise law to raise the money necessary for the payment of interest and principal of the state debt assumed;
4. establish a national bank to secure money from the sale of stock and render it available for business and for the government; to collect and pay moneys through the bank.

The result was revival of business and of confidence in the financial ability of the government.

Incidentally, through disagreement on the funding and assumption bills and later on the bank bill differences regarding the manner of interpreting of the Constitution arise. These differences lead to the establishment of a new party.

A revolt resulting from an attempt to enforce the excise law in Pennsylvania was quickly put down by the federal government and the respect for that government increased.

PROBLEM X

What would be the most advantageous way of paying bills to business houses located at a distance?

REFERENCES.

1. Smith, Grammar School Arithmetic.
2. Philips & Anderson, The Silver-Burdett Arithmetics, Book Two.

The problem may arise in some such a way as the following; The school has ordered seeds and bulbs for school garden and nature study. The materials are to come from a distant city. Inquire of children how money might be sent. It may be sent by registered letter, by money order (postal or express), by check or by draft. Which of these ways would be the most advantageous to the sender?

Suppose the amount to be sent were \$10.00.

1. What would be the cost to send this amount by postal money order? Rates are as follows:

Amounts up to \$	2.50.....	3 cents
" " "	5.00.....	5 "
" " "	10.00.....	8 "
" " "	20.00.....	10 "
" " "	30.00.....	12 "
" " "	40.00.....	15 "
" " "	50.00.....	18 "
" " "	60.00.....	20 "
" " "	75.00.....	25 "
" " "	100.00.....	30 "

1:341; 2:207.

To send this amount by postal money order would therefore cost 8 cents.

As the rate of express money orders is the same, an express money order for \$10.00 would also be 8 cents.

2. What would be the cost of sending \$10.00 by registered letter?

Registration is 10 cents. To send the amount in bills, therefore, would cost 10 cents, which would be 2 cents more than by money order.

3. What would be the cost of sending this amount by check or draft? (1:342)

Business firms frequently request customers to add 10 cents to 15 cents to amount of bill if it is paid by check. This is due to the fact that banks charge from 10 cents to 15 cents "exchange" when checks are cashed by the payee. This would make this method more expensive on \$10.00 than a money order.

To send \$10.00 by draft. In this case a check is made out by the cashier of a bank for which a slight charge, usually 0.1% is made. Such a banker's check is called a draft. It is made payable to the person to whom the money is owed. On \$10.00 the cost, or exchange, would be 1 cent. Banks, however, charge a minimum amount of 10 cents. This plan, therefore, would be more expensive than money orders.

To send \$10.00, therefore, it would be most advantageous to use a postal or express money order.

4. What would be the cost of sending \$20.00 in the various ways?

To send by postal or express money order the cost would be 10 cents.

To send by registered letter the cost also would be 10 cents.

To send by check where exchange is charged the cost would be 10 cents at least.

To send by draft the cost would be 10 cents.

In this case the cost of sending is the same whatever mode is chosen.

5. What would be the cost of sending \$30.00 in the several ways?

By money order.....12 cents

By registered letter.....10 cents

By check.....10 cents

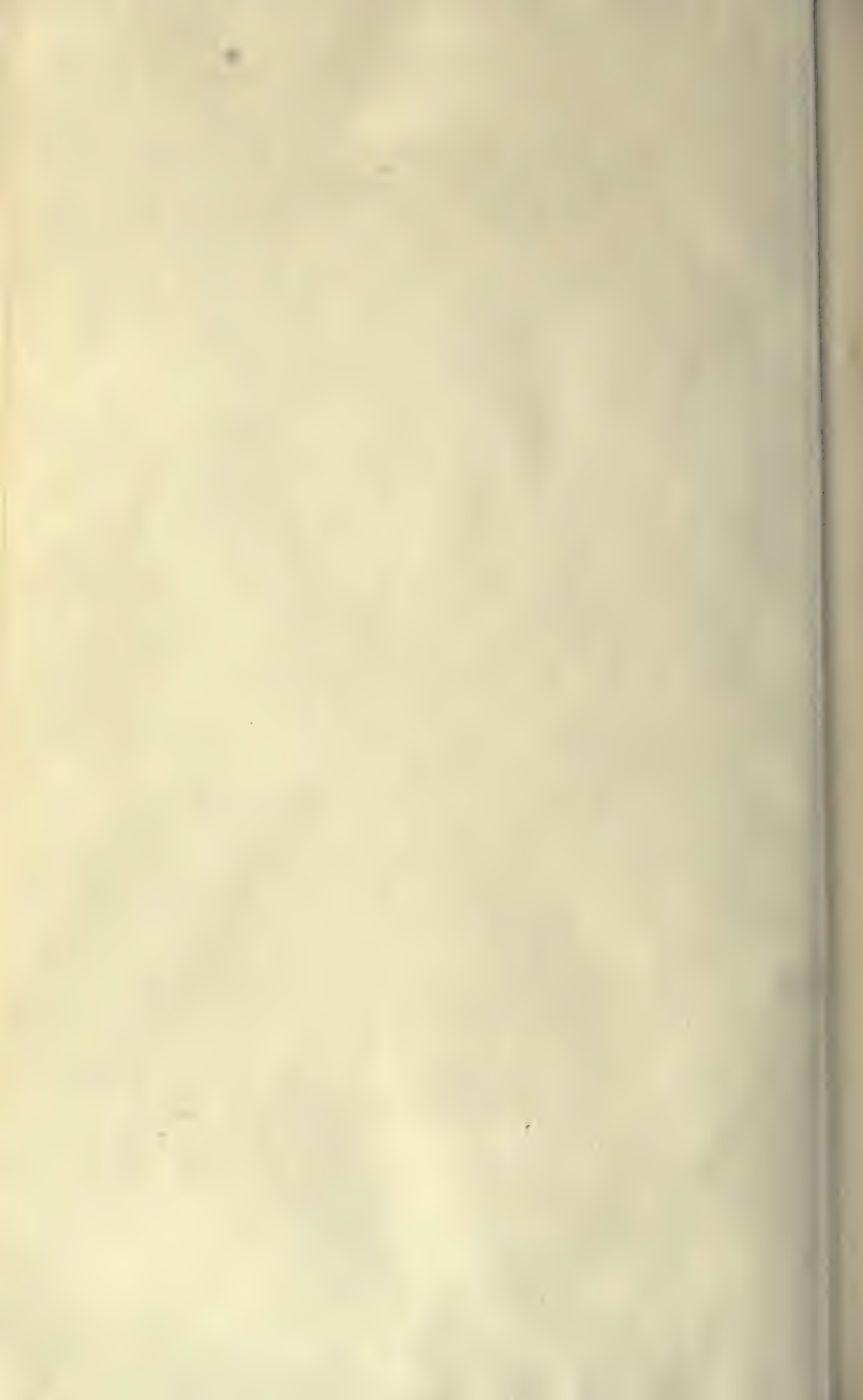
By draft.....10 cents

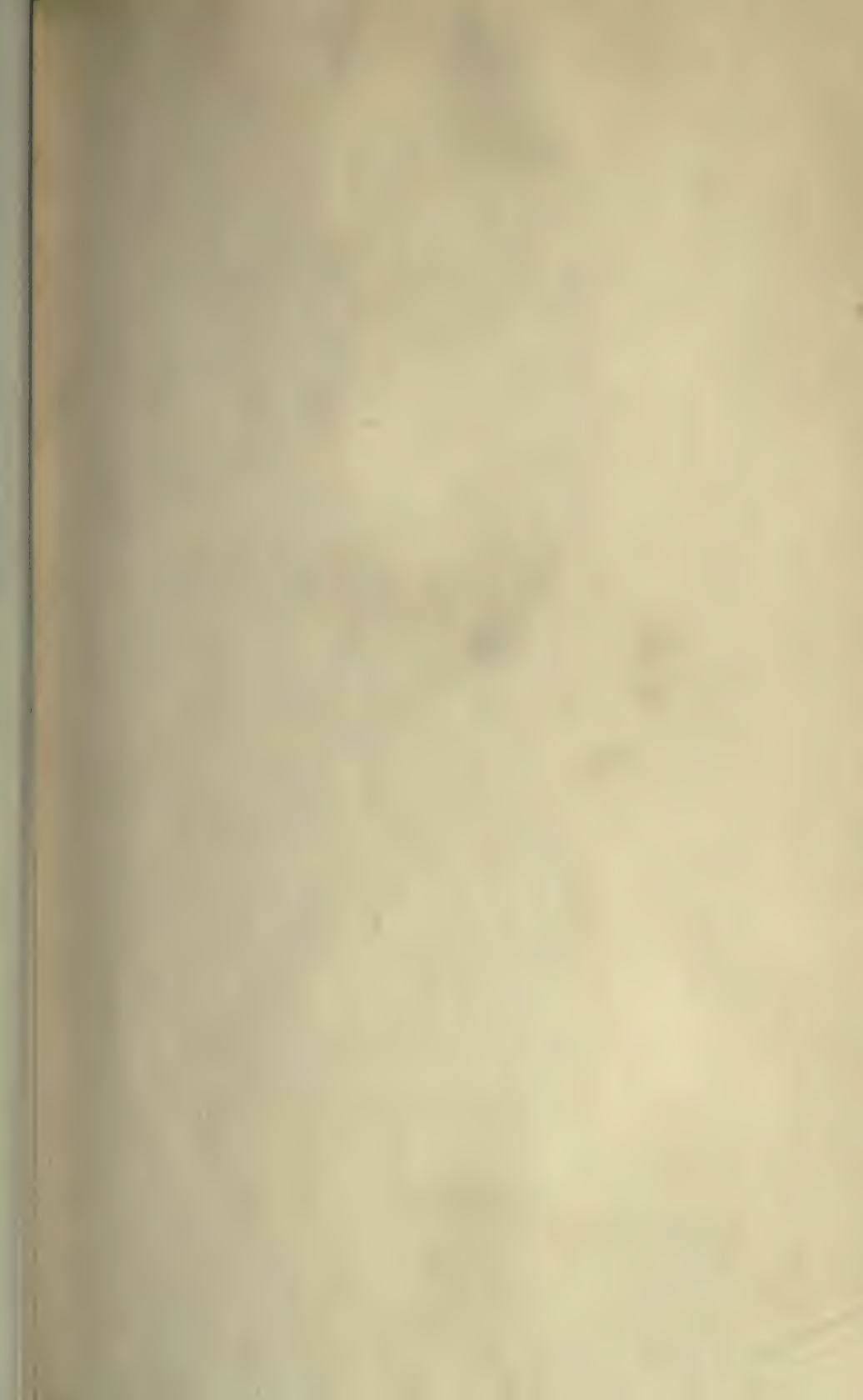
6. Find cost of sending \$40.00, \$50.00, \$60.00.

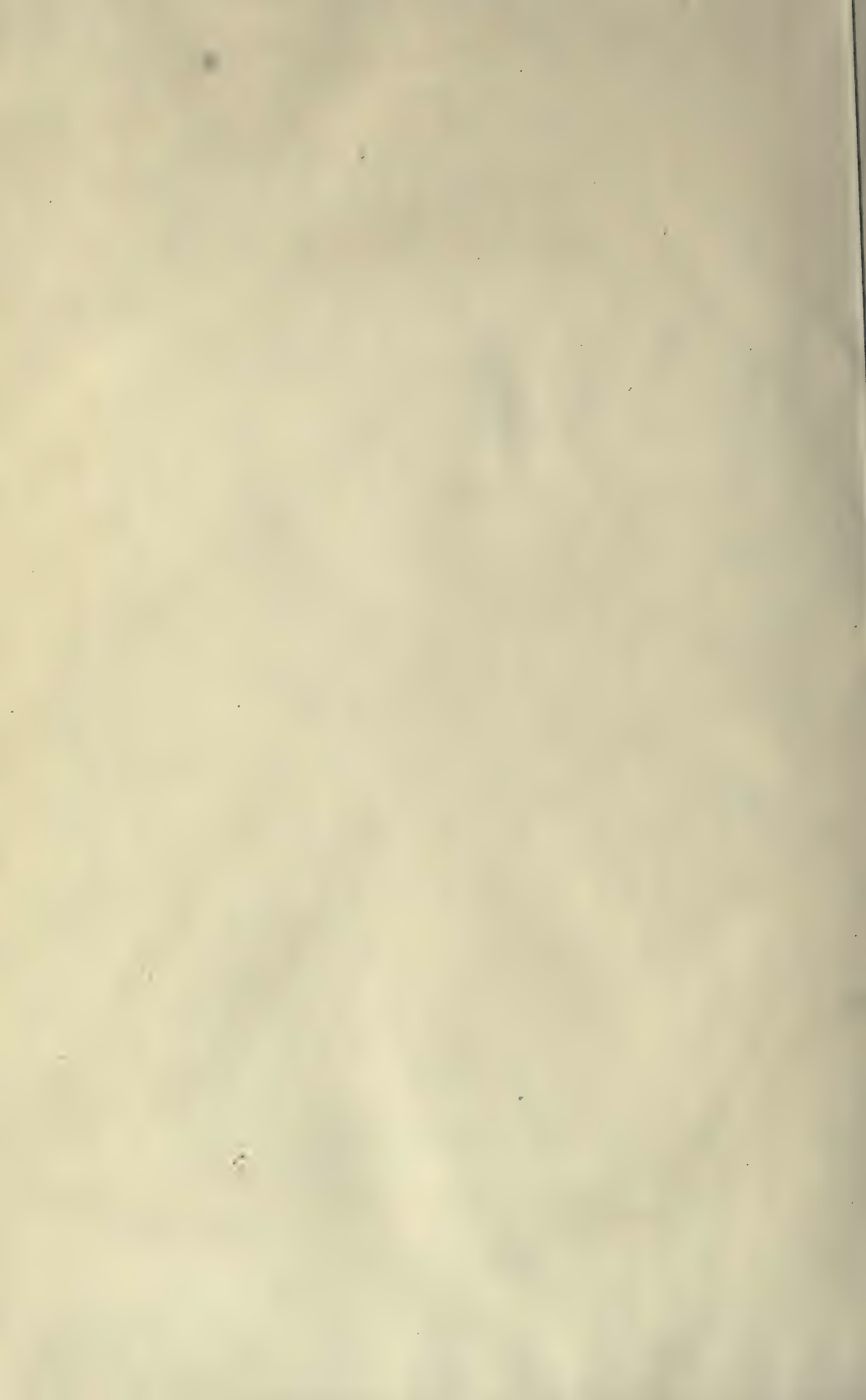
CONCLUSION: For amounts up to \$10.00 the most economical way of sending money is the money order. For amounts from \$10.00 to \$20.00 the cost of sending is the same regardless what plan is followed. For amounts above \$20.00 the registered letter, check, and draft are the most economical.

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